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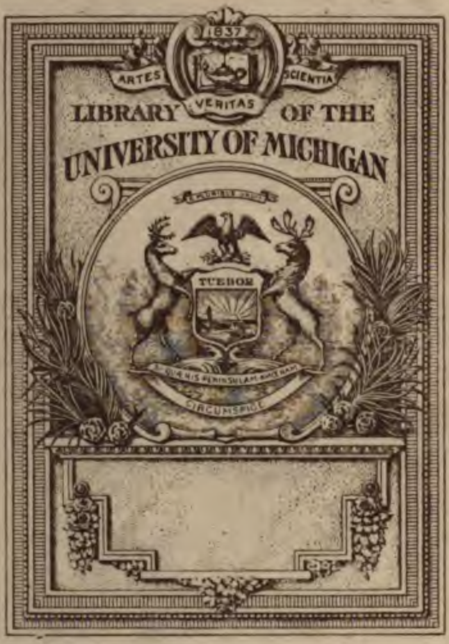
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IN

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The following Works have come to hand :—

Illustrations of the Comparative Anatomy of the Nervous System. By Joseph Swan. Part V. London, 1839. 4to. Pp. 107—195. Plates XXVI. and XXVII.

Medical Portrait Gallery. To be continued monthly. Each part containing two Portraits. Biographical Memoirs of the most celebrated Physicians, Surgeons, &c. &c. who have contributed to the advancement of Medical Science. By Thomas Joseph Pettigrew, F. R. S., &c. Parts XIX. XX. and XXI. Containing Memoirs and Portraits of Dr Roget, Mr R. A. Stafford, Dr Harvey, Dr Cullen, &c. London, 1839. Large 8vo.

A Treatise on the Medical Jurisprudence of Insanity. By J. Ray, M.D. With an Introductory Essay, by D. Spillan, M. D. London, 1839. 12mo. Pp. 436. A new English Edition.

The Eye. A Treatise on the Art of Preserving this Organ in a healthy condition, and of improving the Sight; to which is prefixed a View of the Anatomy and Physiology of the Eye, with Observations on its expression as indicative of the character and emotions of the mind. By J. Ch. August Franz, D. M. et Surgery in the University of Leipsic. London, *1839.* 12mo. Pp. 296.

A Treatise on the Diseases of Infants, founded on recent Clinical Observations and Investigations in Pathological Anatomy, made at the Foundling Hospital; with a Dissertation on the Viability of the Child. By C. M. Billard, D. M. &c. With Notes, by Dr Olliviers of Angers, &c. Translated from the 3d French Edition, with an Appendix, by James Stewart, M. D. London, Dublin, and New York, 1839. American Edition. Large 8vo. Pp. 620.

Observations on Yaws, and its Influence in originating Leprosy; also, Observations on Acute Traumatic Tetanus and Tetanus Infantum. By James Maxwell, M. D., formerly Surgeon to the Annotta Bay Marine Hospital, Jamaica, &c. Edinburgh, 1839. 8vo. Pp. 134.

Cases of Chronic Hydrocephalus, or Water in the Head; with Observations; and a detail of a new and successful plan of cure. By J. F. Barnard, M.R.C.S., Senior-Surgeon to the Walcot Dispensary. Bath and London, 1839. 8vo. Pp. 30.

Text-Book of Anatomy for Junior Students. By Alexander Jardine Lizars, M. D., &c. Part I. Edinburgh, 1839. 12mo. Pp. 272.

The Modern Treatment of Syphilitic Diseases, both Primary and Secondary; comprising an Account of the New Remedies, with numerous Formulæ for their Preparation and mode of Administration. By Langston Parker, M.R.C. Surgeons, and Lecturer on Anatomy and Physiology in the Birmingham Royal School of Medicine and Surgery, &c. &c. London, 1839. 12mo. Pp. 158.

Practical Observations, showing that Mercury is the sole Cause of what are termed Secondary Symptoms. By J. P. Murphy, M.D., Licentiate of the Royal College of Surgeons in Ireland. London, 1839. 8vo. Pp. 107.

Gatherings from Grave Yards; particularly those of London; with a concise History of the modes of Interment among different nations from the earliest periods, and a detail of the dangerous and fatal results produced by the unwise and revolting custom of inhuming the dead in the midst of the living. By G. A. Walker. London, 1839. 8vo. Pp. 258.

Elements of Natural Philosophy; being an Experimental Introduction to the Study of the Physical Sciences. By Golding Bird, M.D., F.L.S. &c., London, 1839. Post 8vo. Pp. 406.

Medical Report of the House of Recovery and Fever Hospital, Cork Street, Dublin, for two years, from 1st January 1837 to 31st December 1838. By J. A. Kennedy, A. M., M. D., President of College of Physicians, and Physician to the House of Recovery and Fever Hospital. Dublin, 1839. 8vo. Pp. 94.

Londres Ancien et Moderne, ou Recherches sur l'Etat Physique et Social de Cette Metropole. Par A. M. Bureaud-Riofrey, D. M., &c. Paris and Londres, 1839. 8vo. Pp. 138.

A Treatise on Obstetric Auscultation. By Dr H. F. Naegle. Translated from the German, by Charles West, M. D., &c. London, Edinburgh, and Dublin, 1839. 12mo. Pp. 120.

A Memoir on the Life and Character of Philip Syng Physick, M. D. By J. Randolph, M. D., &c. Philadelphia, 1839. Large 8vo. Pp. 114.

Elements of Physiology. By J. Müller, M. D., Professor of Anatomy and Physiology in the University of Berlin, &c. Translated from the German, with Notes, by William Baly, M. D. Illustrated with Steel Plates, and numerous Wood-Engravings. Second edition, with corrections and numerous additions. Part I., containing General Physiology; the Blood and the Circulating System; the Lymph and Lymphatic System; Respiration; Nutrition; Growth and Reproduction. Lond. 1839. 8vo. Pp. 471.

Report of the Section appointed to Enquire into the present state of Vaccination, as read at the Anniversary Meeting of the Provincial Medical and Surgical Association, held at Liverpool, 25th July 1839. Worcester, 1839. 8vo. Pp. 98.

A Compendium of Materia Medica, Pharmacy, and Toxicology, containing Tables of the Materia Medica, the Chemical Decomposition of the London Pharmacopœia, and Toxicological Tables. For the use of Medical Students. By D. Spillan, M. D. London, 1839. 12mo. Pp. 80.

Proceedings of the Border Medical Society; Papers read at Anniversary Meeting 1839. 8vo. Pp. 26.

Illustrations of Midwifery, a Complete Atlas and Companion to all Obstetric Works, &c. By Michael Ryan, M. D., &c. London, 1839. Pp. 32. Four Plates. (One number.)

An Introductory Lecture on the Anatomy, Physiology, and Diseases of the Eye; delivered at the Birmingham Royal School of Medicine and Surgery, 4th October 1839. By Richard Middlemore, Surgeon to the Birmingham Eye Infirmary, &c. London, 1829. 8vo. Pp. 30.

Medical Communications of the Massachusetts Medical Society. Vol. VI. Part II. Boston, 1838; and Part III. Boston, 1839. Pp. 34 to p. 182, and p. 183 to p. 257.

An Inquiry into the Morbid Effects of Deficiency of Food, chiefly with reference to their occurrence among the Destitute Poor; also Practical Observations on the Treatment of such Cases. By Richard Baron Howard, M. D., &c. London and Manchester, 1839. 8vo. Pp. 77.

The Medical Miscellany. October 1839. 8vo. Pp. 52. (A new periodical publication.)

The New York Journal of Medicine and Surgery. Published Quarterly. No. I. July. No. II. Oct. 1839. 8vo. New York, Lond., Dub., Paris, 1839.

The American Journal of the Medical Sciences, No. XLVII. May 1839, and No. XLVIII. August 1839.

The Medico-Chirurgical Review and Journal of Practical Medicine. No. LXII. October 1839. Being No. XXII. of a Decennial Series Edited by James Johnson, M. D., and Henry James Johnson, Esq. Lond. 1839.

The London Medical Gazette for the season 1839-1840. No. LI. (615.) September 14th 1839, to No. XII. New Series, (628,) 13th December 1839.

Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences, par MM. les Secretaires Perpetuels. Deuxieme Semestre, No. VII. 12 Aout. No. XXII. 25th Novembre.

Gazette Medicale de Paris, No. XXXVIII. Samedi. 21 Septembre 1839. No. L. Samedi, 14 Decembre 1839.

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A Manual on the Bowels and the Treatment of their Principal Disorders from Infancy to Old Age. By James Black, M. D., &c. London, 1840. 12mo. Pp. 240.

On the Influence of Artificial Light in causing impaired vision, and on some methods of preventing or lessening its injurious action on the Eye. By James Hunter, M. D., &c. London, Edinburgh, and Glasgow, 1840. 8vo. Pp. 94, with an illustration.

A Compendium of Materia Medica and Pharmacy, adapted to the London Pharmacopœia, embodying all the New French, American, and Indian Medicines, also a Summary of Practical Toxicology. By J. Hunter Lane, M. D., &c. London, 1840. Pp. 308. 12mo.

State of an Institution near York, called the Retreat, for persons afflicted with Disorders of the Mind. York, 1839. Pp. 19. 12mo.

Practical Observations on various subjects relating to Midwifery. By the late James Hamilton, M. D., &c. Second Edition, revised and enlarged. Edinburgh, 1840. 8vo. Pp. 425, with illustrations.

Essai Statisque sur la Mortalité du Canton de Geneve, pendant l'année 1838, considéréee tant en general que sous le Rapport Nosologique. Par le Dr Marc D'Espine. Paris, 1840. 8vo. Pp. 130, with an illustrative diagram.

A Treatise on Syphilis. By Herbert Mayo, F. R. S., &c. London, 1840. 8vo. Pp. 128.

A Dictionary of Practical Medicine, comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, &c. By James Copland, M. D., &c. London. Part vi. Pp. 496. 8vo.

Treatise on the Ear, including its Anatomy, Physiology, and Pathology. By Joseph Williams, M. D. London. Pp. 255, with Plates. 8vo.

Weekly Tables of Mortality for the Metropolis, for 11th and 18th January, 1st February, 8th, 15th, do.; 22d, 29th, and 7th March, from the Registrar-General's Office.

We have to return our best thanks to the Registrar-General, and to Mr Farr, for their kindness in transmitting these tables of the weekly mortality in London; and we hope in no remote period to apply them to some practical purpose, illustrative of the mortality and its causes in great and populous cities.

De Sexuali Organisorum Fabrica Disquisitionum Anatomico-Historicarum, Specimen Primum. Edidit Dr Julius Rosenbaum. Halæ. Pp. 136. 1832. 8vo.

Die Lustseuche im Alterthume für Aerzte und Alterthumsforscher dargestellt von Dr Julius Rosenbaum. 8vo. Halæ, 1839. Pp. 464.

Analecta quaedam ad Sectionis Cæsareæ Antiquitates—Commentatio quam pro Venia docendi in Academia Frederica Halensi publice defendet Julius Rosenbaum, Med. et Chir. Doc. Halæ, 1836.

Cases of Chronic Hydrocephalus or Water in the Head, with Observations, and a detail of a new and successful plan of cure. By J. F. Barnard, M.R.C.S. Bath. Pp. 30.

Londres Ancien et Moderne, ou Recherches sur l'etat Physique et Social de cette Metropole. Par A. M. Bureaud-Riofrey. Paris, 1839. Pp. 138.

Aphorisms on the Treatment and Management of the Insane, with considerations on Public and Private Lunatic Asylums, pointing out the errors in the present system. By J. G. Millingen, M. D., &c. London, 1840. 32mo. Pp. 202. With an Illustration.

An Atlas of Plates, illustrative of the Principles and Practice of Obstetric Medicine and Surgery, with descriptive Letter-press. By Francis H. Ramsbotham, M.D., &c. London, 1840. Parts 1, 2, 3. Pp. 80. 8vo.

The British and Foreign Medical Review, or Quarterly Journal of Practical Medicine and Surgery. Edited by John Forbes, M. D. &c. London, January 1840. 8vo.

The New York Journal of Medicine and Surgery. Published Quarterly. New York, January 1840. 8vo.

London Medical Gazette for the Session 1839—1840. No. 13, from 20th December 1839, to No. 25, March 13th 1840.

Gazette Medicale de Paris, No. 39. Samedi, 28th Sept. 1839, to No. 11. Samedi, 14 Mars 1840. Tom. 8th.

The Medico-Chirurgical Review and Journal of Practical Medicine. No. 63. January 1840. Being No. 23 of a Decennial Series. Edited by James Johnson, M. D. and Henry James Johnson, Esq. London, 1840.

Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences, par MM. les Secretaires Perpetuels. Premier Semestre, No. 23, 2d Decembre. No. 6, 10 Fevrier.

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1. JANUARY 1840.

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ORIGINAL COMMUNICATIONS.

Art. I.—*An Experimental Inquiry into the Physiological Action of Ergot of Rye.* By Samuel Wright, B. A., F. B. S. E., M. S. A., Senior President of the Royal Medical, Royal Physical, and Hunterian Societies of Edinburgh, Honorary Member of the Metaphysical Association of Glasgow, and of the Physiological Society of Montpellier. (Being an abridgement of the Harveian Prize Essay for the Session 1837—38.) Continued from Vol. lii. p. 334.

Section VII.—*Action of Ergot upon the Inferior Animals when given in small and continued doses.*

Expt. XXII.—The animal first selected for this inquiry was a terrier bitch, weighing thirteen pounds. I commenced by giving her one ounce of ergot each day, in two, and sometimes three separate doses, to guard against sickness, and more effectually to secure its full constitutional influence. In beginning, I endeavoured to entice her to eat it by intermixing it with her food, but it was invariably refused.* I was consequently under the necessity of pouring the ergot, whilst in suspension, down the animal's throat; an operation at first somewhat irksome to her, but which custom subsequently rendered much less annoying.*

---

* And here I may remark, that I have never found an animal which would taste victuals of any kind, having a considerable intermixture of ergot; and I am fully

During the first week there was considerable tremor after each dose, and an approach to convulsion. The pupils were commonly dilated in about five minutes after taking it, and sometimes, though not always, contracted again after the lapse of half an hour or more. The abdominal muscles were usually drawn in, and hiccup not unfrequently appeared. The heart's action was commonly increased for about twenty minutes, becoming afterwards feeble, at which time disposition to sleep, and frothing at the mouth were often manifest. The animal generally evinced great disinclination to move, and weakness of the hind-legs was the almost invariable consequence of each dose, for two hours subsequently to the exhibition of which she generally discharged urine five or six times, and that copiously. The sight was evidently affected;—she stared wildly, and when her eyes were approached with the finger, it appeared to be no source of annoyance, and the lashes required to be touched ere the lids shrank and closed themselves.

During the period of three weeks, for which time the animal was daily fed with the quantity previously specified, it manifested its usual vigour and activity, keeping up its flesh, and following the ordinary pursuits characteristic of its nature. Being fond of water, she was allowed to bathe two or three times a week; but when under the influence of a recent dose of the ergot, she obstinately refused to enter the river: nor indeed was she inclined for amusement of any sort until its effects had subsided, when her vivacity usually returned. Fatty matters generally disagreed with her, and, if given shortly after the administration of the ergot, not uncommonly produced vomiting. At the expiration of three weeks, the daily quantity given was augmented to one ounce and a half, administered in three separate doses. Between the third and fourth weeks, she began to evince palpable signs of declining health. Her inclination for play was gone; she would not enter the water, and passed the greater part of her time in a corner, crouching as though frightened. She was excessively thirsty, her mouth generally dry, and her nose constantly so.

The respective doses of medicine now affected her much less than before; rarely had she contractions of the abdomen, or symptoms of gastric uneasiness after them. Her appetite became capricious, fat was invariably rejected, and she ate nothing but the

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inclined to Tessier's opinion, that they will die of hunger rather than eat it. For out of more than fifty trials, I have met with but six dogs that would lap the infusion divested of the solid material; and that they took but in small quantity.

* I need scarcely observe, that, to prevent any obstacle to the undisturbed action of the drug, the animal was allowed a large stable to roam in, a plentiful supply of wholesome food, and was exercised twice a day in the open air.

lean of meat, bread, broth, &c. I observed that she commonly held up one leg in standing, alternating the hind with the fore ones, and that which was elevated twitched frequently, without reference to the time elapsed after a dose of ergot. In walking, her legs, and particularly the hind ones, were curiously used, being put down, and often immediately lifted up, as if not feeling the ground. Of the numbed condition of the extremities I have no doubt; for when her paws were squeezed, she manifested no signs of uneasiness, and when pricked with a knife, but little apparent suffering was the consequence. The greatest sensibility, however, was in the anterior part of the body. She was much worse when compelled to lie upon wet straw, and displayed strong proofs of misery when kept there.

A distressing flatulence now came on, which, as well as the dejections, was of so offensive nature as to be almost intolerable. The eyes became weak, glued up in the morning, and during the day they poured out tears abundantly. Although eating a tolerable quantity of good food, she was very weak and emaciated; her legs were comparatively useless, for she walked with difficulty, and seldom turned round without falling. The spine also appeared to be affected, for she could not sit in an erect posture, but was always inclined in a lateral direction, the curvature being sometimes so great as to cause her to rest upon the dorsal surface of either ilium. The muscles of mastication were also much weakened, for the animal used to sit for an hour or more with the lower jaw dropped, and if its food were at all tough, it was chewed with difficulty. And so trifling was the secretion of saliva, that she seemed to swallow the ingesta in too dry a state for the gullet readily to transmit it.

During the fifth week, I tried two ounces of the ergot daily, but finding it to be more than could be easily borne, I reduced the dose to one ounce, preferring its protracted usage, and the full developement of slow poisoning, to a more rapid termination of life, without such progressive results.

At the end of the fifth week, she became much debilitated, lost flesh considerably, and her belly was remarkably contracted. The tears now appeared to be unusually acrid, for the eye-lashes fell off, and the hair on that part of the cheek down which the water trickled, disappeared; the surface subsequently reddened, and was ultimately excoriated. The animal showed signs of difficult breathing, and its nostrils were clogged with puriform matter, which was continually draining from them. Her sight and hearing were much impaired, and I have no doubt, could life have been sufficiently prolonged, that the use of each organ would have been entirely lost. She suffered extremely from flatulence, and her bowels were very irregular, being sometimes constipated, and again equally relaxed, severe tenesmus being occasionally indicated. Her debility was gradually increasing, the slightest muscular effort was a fatigue, and unless roused, she scarcely ever got upon her legs. Every muscular structure seemed alike, for her jaws were so weak, and her tongue so insensible, that she was barely conscious of the presence of food in her mouth, and it was with the greatest difficulty that mastication was performed. During the last four days, she was totally unable to chew, and I was consequently obliged to feed her with strong broth, &c.

For the three last remaining days of her life, her body, which had been previously much reduced in temperature, became quite cold, and never regained perceptible warmth. The motions of the heart were slow and feeble, though its sounds were not unnatural. Respiration was very slow, and accompanied with a slight stertor. She was in a state of constant trembling, coiled up in a corner, and exhibiting the most abject picture of emaciation and debility. Her breath was disgustingly offensive, and the body had a peculiar and very disagreeable odour.

About 12 o'clock on the day preceding that which terminated her existence, she seemed to be dying; but the symptoms were merely an aggravation of those which had prevailed for a week before. The sight was entirely gone; touching the conjunctiva did not affect it; and the whole body appeared to be insensible to pain. The urine slowly dribbled away, and a slimy dejection passed in a similarly involuntary manner. There was no spasm, though in each inspiration the abdominal muscles contracted powerfully. About 4 o'clock in the afternoon, she began to move her head from side to side, and to moan plaintively. At 10 in the evening, the motions of the head had ceased, the action of the heart, I could neither feel nor hear, and the only discoverable sign of life was a convulsive gasp, which occurred about every four minutes. At 5 on the following morning, she was in precisely the same condition, gasping about every five minutes At 1 A. M. she died, having taken in the first three weeks 21 ounces; the same quantity in the next two weeks; and 14 ounces in the two following weeks; making collectively, 56 ounces of solid ergot, in the space of seven weeks.

Inspection.—The animal's weight was reduced from thirteen pounds to seven pounds and a half. None of the muscles could be affected by galvanism. Most of the superficial ones were soft and pale, and in some instances easy of laceration. The heart was very flabby, and much smaller than I ever saw it in such an animal. The right cavities were filled with dark blood, as also the left ventricle, but the left auricle was empty. The lungs were much darker than usual, and were also extensively tuberculated.

The lining membrane of the trachea was occasionally thickened, so as to exhibit very distinct inequalities. When cut into, these enlargements did not appear to be anything more than indurated and thickened mucous membrane. The trachea and the bronchial ramifications were lined with a puriform fluid, having a very disagreeable odour, of a reddish colour, with an intermixture of green. The gullet had an inflamed appearance, as also the lining membrane of the stomach, which organ was distended with flatus, and the undigested portion of the last meal. The intestines were remarkably diminished in size throughout, and, in many places, distinct and well defined contractions were apparent. Their mucous membrane was injected with red vessels as far as the end of the jejunum; it then exhibited its natural appearance to within four inches of the termination of the rectum, when it again became highly florid and vascular. The kidneys were natural. The spleen was remarkably small, not one-third its usual size in such an animal, and from its minuteness, I had considerable difficulty both in finding and recognizing it. The liver was much enlarged, but not distinctly altered in either colour or consistence. The pancreas, uterus, and bladder, were all natural in appearance. The *dura mater* was slightly injected, but the other membranes, and the substance of the brain were of a healthy character. The spinal chord was examined throughout, but it discovered nothing unusual. I found distinct traces of ergot in the blood, but I was unable to detect it in either the brain or spinal chord.* The inspection was conducted in the presence of Mr Bowker, surgeon.

The body was completely putrid in twelve hours.

Expt. XXIII.—*July 5th.*—On this day I commenced giving the ergot to a bull-terrier puppy, four months old, whose weight equalled ten pounds. Lest there should not have been time in the last experiment for the full influence of the drug, I determined in this instance to give it every other day, so as to protract the period of death, and allow the poison every opportunity of displaying its virulence.

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* The mode which I adopt for the detection of ergot in the blood, consists in separating its oil, the only constituent upon which a practical inquiry can be founded. In this instance, 1000 grains of blood were taken from the dog, stirred to prevent coagulation, and then acted upon with successive portions of sulphuric ether. This fluid has the property of removing the crystalline fatty matter of the blood, but it also takes up its oily matter; and as it is a most active solvent of the oil of ergot, of course, it would separate three constituents, the crystalline fatty matter, the oil of the blood, and the oil of ergot. The ethereal solution was cautiously evaporated, and the residue treated with very dilute alcohol. This takes up the oil of ergot, whilst its degree of dilution does not allow it to touch the crystalline fatty matter, or the natural oily constituent of the blood.

The alcoholic solution, after evaporation, left fifteen grains of oily matter, which, when slightly heated, became black, and evolved the odour of an old tobacco pipe. It was volatile, and exhibited every appearance of the oil of ergot.

It is to be regretted that we have not more decisive tests of the presence of ergot in the blood. The means above described are all that are within my reach, and are necessarily imperfect, when we consider the similitude amongst oils. But the mode of analysis which the most established chemistry will warrant, (see Rees on the Analysis of Blood and Urine), in some degree justifies the conclusion. Then, the quantity of oil which I obtained is greater, by ten grains, than that which healthy blood will ever furnish.

As before observed, I could not detect it in the brain or in the spinal chord. I have also failed to discover a similar material in the blood of animals not taking ergot.

I began with half an ounce, giving it in three separate doses, which occasioned symptoms resembling those previously described, though in a milder degree. At the end of three weeks, his appetite began to decline, and such irritability prevailed, that he was even offended at being fed, and attempted to bite the hand that was contributing to his sustenance. I need scarcely remark, that he was materially put out of humour when the medicine was given. Instead of having thus early, the diminished sensibility of body, characteristic of the last animal, his feeling seemed to be morbidly increased; and, whether from terror or pain I know not, but if at all roughly handled, he cried piteously. On the commencement of the fourth week, the quantity of ergot taken on each day of its administration was augmented to three-quarters of an ounce.

During the fifth week, he began perceptibly to lose his flesh; a diminution much more palpable in the hind than in the fore-legs. His appetite was not materially impaired; he walked with a staggering pace, but would never follow any one.

At the end of the sixth week, one of his hind-legs began seriously to fail, the coxo-femoral articulation being implicated, and I was almost led to anticipate, what the previous experiment had somewhat discouraged, the occurrence of dry gangrene. There was at this time a curious train of symptoms, somewhat indicative of a loss of common understanding. At one time, he would sit for an hour together, working his lower jaw, as if chewing something; this would perhaps be succeeded by a restless turning of the head in all directions, and then he would suddenly start as if frightened, and scamper off, crying at the same time. Again, he would commence to walk backwards, moving his lower jaw as though curbed by a bridle, then he would walk forwards, and stagger up to a wall or any other impeding object, apparently unknowing of its existence. At another time he would sit with his head elevated, constantly turning it round, as if seeking for something; or he would sullenly retire into a corner, and refuse to stir.

These are a few of the very numerous train of idiotic symptoms which the animal manifested. Some of them are to be explained by the fact, that he was nearly blind and deaf; but I think they also prove that he was suffering from a correspondent mental decline.

His evacuations were generally regular, and abundant in bile, but exquisitely offensive, as also the flatus, which was a source of much annoyance. The secretion of urine was copious, but, in other respects, natural. The pupils were not influenced by light, and from the inner angles of the eyes, there distilled a thin, puriform, acrid fluid, which excoriated the parts over which it trickled. The motions of the heart were at first quickened by each successive dose of the ergot, but they were now uninfluenced, and maintained a slow and feeble character. The temperature of the surface was considerably diminished, and its sensibility also, but the irritability of the animal rather increased.

At the termination of the seventh week, he could not walk, though he made many and frequent attempts, in which he fell exhausted. The muscles of the lower jaw were now so weak that he could hardly move them; at least, I scarcely know whether to consider it actual debility, or a loss of voluntary command over them. It was perhaps both; for when food was put into his mouth, the act of chewing was a mimicry of the process, the substance being ludicrously tossed about, and finally ejected. I was therefore obliged to feed him as I fed the other. The senses of smell, vision, and hearing, were now, to all appearance, quite gone. The femoral articulation of the left side was weaker and more emaciated, and if touched, the dog yelled in torture. The abdomen was much contracted, and the right hypochondrium greatly enlarged, owing to the enormous size of the liver.

These symptoms, under daily aggravation, continued until the commencement of the ninth week, when the animal died, having taken in that time twenty-three ounces and a quarter of solid ergot. I may here remark that this dog had the distemper a few weeks before taking the ergot, and was fully recovered from it at the time the experiment was commenced.

Inspection.—The only parts of the body susceptible of galvanic influence were the pectoral muscles and the diaphragm. The heart was small and soft, containing dark blood in all its cavities. The lungs were much darker than usual, and their surface exhibited various spots like ecchymosis, not the consequence of gravitation, from their position, but apparently resulting from the stagnation of blood during life. They were extensively tuberculated. The lining membrane of the trachea was thickened in its entire extent, of a dirty yellow colour, and of a putrid smell. The stomach contained a little food, and was distended with air of an offensive odour. Its lining membrane, as also that of the intestines, was natural throughout. The latter organs, however, were much diminished in size, and in some places distinct bands of contraction encircled them. A small abscess, about a quarter of an inch in diameter, was discovered in the duodenum. The kidneys were pale and remarkably soft. The spleen was as much reduced in size as the one described in the last experiment. The liver was excessively enlarged, and in some places indurated, but I could discover no traces of ulceration. The gall-bladder was full. The glands in the neck and groin were indurated and enlarged. The brain was softer than usual, as also the spinal chord; in one or two places the brain was semifluid, but I could discover no marks of recent inflammation. All the joints were examined without discovering any indications of altered structure, the coxo-femoral articulation of the left side excepted. Here the cotyloid cavity was found almost full of blood and purulent matter; the membrane lining it, as also that covering the head of the femur, being increased in thickness and much softened. The neighbouring ligaments were more lengthened, and less firm in their structure than usual. The body rapidly decomposed.

Upon comparing these experiments and their results with those effects which are said to have followed the use of ergotted rye on the Continent, it will be found that a great and serious difference exists. How the discrepancies are to be explained I am at a loss to determine. All that I can do is to vouch the truth of my own experiments. It does not become me to deny what was previously written; and yet I must acknowledge that I have never been able to confirm the accuracy of the cases recorded in foreign publications. Allowance must be made, it is true, for the difference between the susceptibility of the higher and the lower animals; and were this the sole cause of variance, I should certainly be inclined to credit the reports upon the virulence of the drug; but as it is said equally to influence the human frame and that of brute animals, I am totally unable to solve the difficulty. The only reason which I think it possible to assign, is the liability of ergot to diminish in strength by keeping. That it spoils when not cautiously preserved every practitioner is aware; and Noel even asserts that it altogether loses its deleterious properties by being kept for a few months in sheaf.* Nevertheless, this does not appear to be sufficient; for the activity of my sample was well attested by the preceding experiments; it is the difference of result which remains a problem. Whilst Tessier says that he has killed dogs, with from an ounce and a half to two ounces, within a fortnight, decided symptoms of gangrene having appeared, I have employed the same drug to the extent of above fifty ounces, and in one instance to above sixty ounces,† without any such consequences. I cannot help thinking that accessory circumstances must have greatly assisted Tessier's results, and that his animals, unlike mine, were drugged and starved together;—

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* Quesnay, Traité de la Gangrene Séche, p. 407. Paris, 1749.

Dodart, Languis, Larse, Taranget, and Vetillard, say that the new grain produces much more destructive epidemics than the old; but, on the other hand, Villeneuve, (Mem. p. 80.) denies that it is injured by keeping even for years. (Thèse du mode d'action et des effets Therap. du Seigle Ergoté. Par Adolphe Bouchor, p. 6.)

† See Experiment 24th.

> "Quicquid excessit modum
> Pendet instabili loco."

This opinion is confirmed by the fact of other experimenters not having substantiated Tessier's conclusions. Pentrin has remarked, that in Silesia, when the bread has been composed of one-eighth or even one-sixth of ergot, people have eaten of it without sustaining any injury.[*] Mr Froggart of Westminster has given an ounce of ergot in less than an hour, without any remarkable effect save frequent micturition.[†] Michell relates a case in which an ounce was taken by mistake. After the lapse of two hours and forty minutes it was ejected by vomiting, but no injury was discoverable. And he further states that he took eighteen drachms in fourteen days, without experiencing any sensation above that which follows a glass of old beer.[‡] Parmentier took every morning, during eight days, half a drachm of ergot on an empty stomach, and his freedom from injury he thus describes: "My sleep was tranquil during all the time, nor had I the smallest headach." Maier, as reported by Wesner, took ergot in increasing doses, to a very considerable amount, without being materially affected by it. Goupil states that he has taken two drachms and a half for a dose, and that sickness, vomitings, colic pains, and slight headach were the only bad symptoms which followed.[§] Professor Murray gives the cases of two beggars, who took every day, for eight days, an ounce of bread each, containing three drachms of ergot, and suffered no inconvenience.[||] Prescott states that he has given six ounces of ergot in nine days, without producing any bad effects.[¶]

On the contrary, it must be admitted, that there are instances recorded in which small doses of ergot have produced very energetic and violent consequences; though the small number of such cases requires that they be ranked as the exception, and their converse as the rule. M. Cordier swallowed two drachms of ergot, which caused violent and protracted vomiting of sour matter, smelling strongly of ergot; and a perceptibly sour smell was given to his perspiration.* The latter symptom is rather remarkable, and has been repeatedly noticed.† Dr Maunsell relates the case of a female, four months pregnant, who was rendered delirious by two drachms of ergot, given in the space of half an hour.‡ Another case is related by this author, in the same Journal, in which half a drachm of ergot, given in two doses, caused at the expiration of fifteen minutes, violent headach, stupor, and depressed pulse. He also mentions an instance related to him by Dr Johnston, where two drachms of ergot, given in two separate doses, produced in six hours, incomplete coma, livid face, and muttering delirium. Dr J. Y. Simpson, of Edinburgh, mentioned to me an instance occurring to his own observation, in which small doses of ergot produced symptoms almost amounting to intoxication.

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[*] Neale on Ergot, p. 68.

[†] Lancet, 1828–9. Vol. i. p, 190.

[‡] Michell on Ergot, p. 122.

[§] Journ. des Progres des Sciences et Institut. Medicales.

[||] Apparatus Medicaminum, Vol. v.

M. Lalesque reports the case of a female who took a decoction of ten ounces of ergot in twenty days; and another in which eight ounces were taken in a month, without the production of any mischief. (Journ. Hebdom. Univ. Tom. xii. p. 245.) And it would appear that the ergot of some districts is very little injurious. "Model dit avoir expérimenté que l'ergot des environs de Saint-Petérsbourg n'est pas delétère; Pallas dit qu'il ne régnait point de d'épidémie dans plusieurs provinces Russes, qui en faisaient usage dans leur nourriture. (Thèse du mode d'action et des effets Therap. du Seigle ergoté, p. 6. Par Adolphe Bouchor.)

[¶] See Lond. Med. and Phys. Journal, 1816, Vol. i. p. 380.

The spasms which have been said to follow the use of ergot I can fully believe; for in animals such as dogs, whose susceptibility is greatly inferior to that of man, I have noticed symptoms strongly resembling convulsion, and the injection of ergot into the arteries and veins, as before shown, is most decidedly productive of violent spasm. And hence I can believe it possible for gangrene in the human subject occasionally to have followed its use as an article of food; and the state of the cotyloid cavity in the last experiment, would almost justify the inference, that so great a quantity of ergot, if administered to man, would have caused a loss of the limb.

But in speaking of the production of gangrene by ergot, it must be remembered that many other circumstances are liable, not only to assist in its formation, but, independently of the drug, actually to occasion it. We know that, if a ligature be put upon the crural nerve of a rabbit, gangrene takes place in a few days, and sloughing follows. Cutting away a portion of such nerve is said to be attended with a similar result,§ and the presence of a hard tumour, or any other foreign body, may, by continued and increasing pressure upon a nerve, be productive of a like consequence. Cold, ‖ by diminishing the circulation in any part, and innutrition,* by lessening the actual quantity of invigorating blood, may equally contribute to the same end. Obliteration of the arteries, by impeding the necessary admission of blood into any part, especially into the extremities, may produce gangrene, which, in the absence of due investigation, might be imputed to another cause, innocent of its origin.

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* Journ. Gen. Avril.

† Experiments with ergotted rye on Man and Animals. "Versuche und Beobachtungen über die Wirkung des Mutterkornes auf den menschlichen und thierischen Korper, &c. &c. Dr C. J. Lorinser. Berlin, 1824."

‡ Lond. Med. Gazette, 1834, June 26, p. 605.

§ See Lond. Med. and Surg. Journal, 1828, Vol. i.

‖ It will be found on referring to the history of gangrenous ergotism, p. 19, that its production was in one instance, as much attributed to the inclemency of the season, as to the use of ergotted bread. In other cases, it will be observed, that it raged in marshy situations and in the villages, more than in cities and dry places, p. 16.

In conversation some time ago, with a medical friend, he informed me that a case of gangrene once occurred to the observation of Dr Elliotson, whilst physician to St Thomas's Hospital, in the person of a man who was taking ergot of rye. I immediately wrote to Dr Elliotson, who, in reply, kindly informed me, that he "once saw a patient in St Thomas's Hospital, whose leg became gangrenous whilst taking the ergot of rye; but upon examination, it was found that the main artery of the leg was ossified and obstructed." He further added, "I have used ergot extensively, and sometimes for a fortnight together, without ever observing any signs of gangrene."

From this fact, it is obvious how careful we should be not to attribute a destructive tendency to any medicine, without being satisfied that no concurrent circumstances have contributed to deceive us.

Nevertheless, from the numerous substantial cases in which the virulence of ergot is represented, I am inclined to the opinion, that gangrene may have frequently succeeded its use. For the symptoms described as preceding dry gangrene, I have more than once seen from comparatively small doses of ergot.

During the month of October 1837, in the absence of Mr Walker, I attended in a medical capacity at the Poor House of Basford, in the county of Nottingham. Amongst the number of patients submitted to my charge, was a woman, who, in consequence of repeated attacks of flooding, had been treated for a fortnight previously, with the *Secale cornutum*, in doses of half a drachm three times a-day, which had the very desirable effect of mitigating her sufferings. I increased the dose to one drachm, directing it to be taken four times a-day. When visiting her, five days after the alteration of the dose, she observed unsolicitedly, that she was excessively nervous and irritable, sparks appeared to flash before her eyes, her head was sometimes heavy and throbbing, and again so light and giddy that she could scarcely stand. She remarked further, that, on awaking in the morning, she had a peculiar tingling sensation all over the body, sometimes merely a slight creeping feel, and at others, the symptoms increased even to painfulness. These she declared never to have felt prior to the augmentation of the dose of ergot, and was firm in her belief of its production thereby. As her complaint had ceased, I did not deem it prudent to gratify my own curiosity at the patient's risk, by continuing the medicine;—its use was consequently stopped, and in a few subsequent days all the unpleasant symptoms had completely disappeared.

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* Dodart observed that the poor were more subject to gangrenous ergotism than those whose circumstances in life secured to them a greater extent of domestic comfort. See page 18.

The following case, still more demonstrative of the influence exerted by this remedy, upon the nervous system, was kindly communicated to me by Mr John Wright, surgeon of Nottingham.

"Mrs S., a person of delicate habit, and already the mother of two children, began to complain of approaching labour about seven o'clock in the evening of August 15, 1837, and, continuing to grow worse until three o'clock on the morning of the following day, she requested my attendance. Soon after entering her apartment, I learned, from an examination conducted in the usual way, that the *os uteri* was largely dilated, and disposed still further to yield to the fœtal head, which was descending into the cavity of the pelvis. The pains then recurred at intervals of eight minutes, but, becoming progressively more frequent, they were observed about seven o'clock to succeed each other with distinct intermissions of three minutes only. The head had not yet fully occupied the cavity of the pelvis, partly owing to the circumstance of the face having been directed towards the pubes, instead of falling into the hollow of the sacrum, and partly to a declination of vigour in the uterine efforts. The soft parts were favourable to delivery, and the pains, as already intimated, were sufficiently frequent, but were ineffective in their character. The case thus inviting a trial of the ergot of rye, I infused two drachms of it in half a pint of boiling water, and after allowing it to stand for ten minutes I cooled one-half, and administered it exactly at half-past seven o'clock. The third pain, which followed the draught, I thought increasingly urgent;—the next, decidedly so, though following its precursor at no shorter interval of time than was previously noticed. She now took the remainder of the infusion—the pains acquiring a still more expulsive character, but marked as yet by distinct intermissions. Not content with negative evidence of the latter fact, I more than once asked her, during such intermissions, if she were free from pain, when she assured me, that, with the exception of a sense of weight referable to the perinæum and anus, she was quite easy. Presently, however, the uterine action grew more intense, and on being desired to spare herself during the absence of pain, all expressions of suffering, so that she might be better provided with strength to support that which should be forthcoming, I was told, as is no uncommon occurrence when the ergot has not been given, that the pains were never wholly absent. She was delivered within half an hour from the time of taking the first dose. On calling upon her the next day, she observed that, in a few minutes after I had left her, she became sick, and vomited what appeared to be the medicine she had recently taken. Presently afterwards she lost all voluntary motion, and even the power of utterance. Her heart she described as having beat very rapidly for a long time, and her breathing as having been exceedingly laborious. Nevertheless, she was conscious; but the room presented to her the impression of water excessively agitated on its surface. She could compare it only to the 'foaming of a troubled sea.' After some hours the heart beat more quietly for a time, and then fell into inordinate activity as before; intermitting in this manner throughout the day, during the earlier part of which she lay perfectly motionless, but without pain, recovering gradually towards evening the suspended animal function. In the course of the day she made much water, of the escape of which she was perfectly conscious; and along with the return of voluntary motion, she dated the recurrence of sensibility and a consequent suffering from after-pains. She declared that such was her helplessness at one time, that 'had the child been falling out of bed, or had the house been on fire, she could not have made the least muscular effort.' But supposing her condition to have arisen from the medicine she had taken, and enduring no pain, she and her friends thought it useless, until the time when, according to custom, I should next visit her, to report that condition with which I was supposed to be perfectly familiar. With the exception of an unusual fretfulness and an occasionally hurried action of the heart, she suffered no further inconvenience throughout the puerperal state."[*]

I may add, that I called with my brother at the house of this patient, and heard, in her own declarations, the substance of the report.

Michell also appears to have noticed similar results. Speaking of ergot he says, "Its effect on the mother is to cause a deadness on all parts of the body."[†] In another place he observes, after giving ergot, " The woman's legs were completely useless from the cramp pains in them."

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[*] A similar case is recorded by M. Flaubert.—Observations Pratiques sur l'Emploi du Seigle Ergoté pour combattre l'inertie utérine. These. A Paris, 1832. He says, Obs. xiii. p. 22–3, "Après avoir pris la seconde dose du seigle ergoté, la malade ressentit une vive douleur dans la cuisse droite, qui cessa peu de temps après, et fut suivie d'un engourdissement du pied tel, que Madame A...... perdit plusieurs fois sa pantouffle sans s'en apercevoir; jusqu'au moment d l'accouchement, elle se plaignit toujours de ne point sentir son pied. Lorsqu' elle fut replacée dans son lit, je visitai cette partie; le pied jusqu' aux malléoles etait pâle et froid; je fis frictionner avec du vin chaud, et envelopper ensuite avec un morceau d'etoffe bien chauffé, et je recommendai à la malade de tenir le pied malade sur une bouteille de grès remplie d'eau bouillante, jusqu'a ce que la chaleur fût revenue. Pendant trois jours le pied resta froid, et l'engourdissement ne se dissipa entièrement que quinze jours après l'accouchement."

[†] On the Uses of Ergot, p. 73. A declaration certainly at variance with that of M. Barbier, who says that, upon a healthy subject, ergot has no action, affecting

Paralysis, from the use of ergot, is by no means an uncommon occurrence where its employment is protracted, or the doses are large. Larrey is of opinion, that the involuntary jets of urine in a case related by Barbier were a consequence of paralysis of the sphincter of the bladder, and that the ergot did not excite the organ as many have supposed.*

Upon the preceding experiments illustrative of slow poisoning by ergot it may be remarked, that although gangrene did not appear, yet the medicine produced a very decided impression upon the nervous system. The defect in the functional power of the different organs of sense, and particularly the blindness, loss of feeling, and coldness, favour the idea, that nervous susceptibility was much diminished, and its beneficial influence upon the system consequently much lessened. Indeed, it seemed to produce a slow and gradual decline of nervous energy, its exhaustion finally terminating in death.

But, upon further investigating the subject, it will appear that besides debility, actual disease was induced. The watery condition of the eyes, overflowing of the tears, puriform discharge from the nostrils, thickening of the membrane lining the trachea, enlargement of the liver and of the absorbent glands, and tubercles in the lungs, clearly, and I think indisputably prove, that a scrofulous condition was engendered. Some may urge that this was not caused by the ergot, but was merely an attendant of emaciation. That innutrition is too common a source of scrofula I am sorry to admit, but that it was the exciting cause in these experiments will, in my opinion, require much confirmation. For every precaution was taken to give full liberty to, and obviate every influence with the operation of the ergot. The experiments were all performed in the country, where good meat, abundant exercise, and clean airy residence were always provided. Then Expt. XXVIII., where the animal slowly poisoned with foxglove, exhibited the emaciated and reduced condition of those destroyed by ergot, does not show us any proofs of a scrofulous state ; and Expt. XXIV., in which the appetite was little impaired, and yet the mesentery was studded with tubercles, brings all the evidence which actual demonstration can adduce, of the disease having arisen from the ergot and not from starvation.

There are also a few other symptoms which it will be proper to notify. Animals slowly poisoned with ergot are said to have retained a good appetite and an unimpaired digestion until

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neither the stomach, the circulation, nor the head.—(Arch. Gen. de Med. xxvi. 131.)

* Arch. Gen. de Med. xxvi. 132.

death. This (with one exception) I have never observed; on the contrary, the appetite has gradually diminished, until the animals have totally refused food, and have therefore required feeding. And the flatulence, with its extreme offensiveness, supports the idea, that digestion was both imperfect and depraved.

The heart (in dissections) is said to have been empty in all its cavities.[*] On the contrary, I have more than once found all the cavities full. And never have I seen them empty. Tissot says, that M. Des Essurs, Lieutenant-colonel of a regiment at Blois, in a letter to MM. the authors of the Journ. Encyclop. 1772, Tome ii. Fevrier, p. 122, reports the advantage which attended the administration of milk, by M. Plouche, an old physician, in the cases of animals poisoned by ergot.[†] And Michell explains the mildness of ergot in his hands, by saying that he usually gave it in milk.[‡] This fact I have not been able to confirm. I have repeatedly made cats sick by giving them an infusion of ergot in milk; and in administering it to dogs whilst in the process of poisoning by ergot, I have invariably found them worse,—the coagulum being apparently more than their stomachs could bear.

The pulse is said to have been unaffected throughout. This is a result which I have never yet witnessed. I have never seen an healthy animal under the influence of a liberal dose of ergot, without the heart's action being at first considerably increased, and subsequently diminished both in force and frequency. This circumstance has also been observed by others. Dr Cusack saw a case in which a drachm and a-half of ergot were given, and the pulse sunk from 120 to 90, considerable stupor and epistaxis supervening.[§] The same physician, in the 5th volume of the Dublin Hospital Reports states, that, in three instances where it was given in half drachm doses, symptoms of an apoplectic kind came on, and the pulse did not exceed 40 in a minute. Dr Ryan says that he has seen the pulse quickened in some instances, and lowered in others, by the ergot. Dr Rollet found the pulse affected, but he does not pointedly describe it, merely saying " que la mere de la malade trouva comme moi, une notable difference dans la vitesse du pouls."[‖] The remarkably diminished size of the spleen is an interesting and a curious fact. I am not able to account for it, unless in acknowledging the function usually ascribed to that organ, the dyspeptic state is regarded as having contributed to lessen it.

Expt. XXIV.—I commenced feeding a large doe rabbit, weighing seven pounds and a-half, with the ergotted rye, in the dose of three-quarters of an ounce daily, given in two equal quantities, night and morning. From the smallness of the gullet in this animal, I was obliged, in each instance of administration, to introduce an elastic gum-catheter into the stomach, and (with the aid of a syringe, adapted to the free extremity,) to inject the drug, during its suspension, into that organ.

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[*] Dict. de Med.

[†] Tissot, Traité des Nerfs, &c. Tome vi.

[‡] Michell on Ergot, p. 126.

[§] Lond. Med. Gazette, 1834, June 6th, p. 606.

[‖] Journal Hebdomadaire.

For several weeks the animal remained unaffected, and I was somewhat doubtful whether the ergot would kill her, how protracted soever its use might be. She was with young when I commenced the trial, and I waited anxiously for a natural birth, as there was evidently no tendency to abortion; and at the usual time she brought forth six young ones, lively, of good size, and apparently in good health. The day after delivery she was again put to the male rabbit, and the young ones during the period of three weeks were allowed to remain with her, and when removed, showed no symptoms of declining health. Towards the close of the last period of gestation, the rabbit appeared to be ill; she looked drowsy and moping, sitting in a corner, and not as before, startled when touched. Her hair became long and erected, having the rough, coarse aspect, usually presented in winter. She exceeded her previous period of gestation by five days, and then brought forth three young ones, two of which were dead, and not more than half-grown;—the other, alive when born, was triflingly larger, and died in a few hours. I could discover no morbid appearances; every organ seemed to be in a natural state.

The sexual appetite of the mother did not return, and of course she never conceived again.

In the ninth week, an extensive tumour formed under the lower jaw, which on being opened, poured forth a quantity of greenish-yellow purulent matter. In a few more days, a fresh quantity of matter was formed, which continued to discharge until about a week prior to her death.

During the eleventh week three of her front teeth dropped out, and the remaining one disappeared shortly afterwards. Her eyes were covered with a puriform secretion, and the hair in their vicinity came off. It was not until this time that I observed any marked decline in her appetite. Its keenness had been diminished, but not conspicuously. Now, however, she ate but little, and that consisted entirely of green food. For two or three days prior to her death, she was scarcely able to stir, made a great quantity of water, and was much purged.

In the middle of the twelfth week she died, having taken in that period about sixty-four ounces of solid ergot. Her weight was reduced from seven pounds and a half to five pounds and a quarter.

Autopsy.—In the presence of Mr Walker, surgeon, I examined the body a few hours after death. The heart contained blood in all its cavities, that on the left side being as dark as venous. The blood in this organ, as also that in the larger veins, was uncoagulated, and on examination furnished decided indications of the presence of ergot. The lungs were dark and extensively tuberculated. The bronchial ramifications and trachea contained mucus tinged with blood, and smelling offensively. The lining membranes of the stomach and intestines were natural, but the latter organs were in many places distinctly contracted. The spleen was less reduced in size, and the liver much less augmented in volume than those of the other animals subjected to the same experiment. The mesentery was studded with tubercles, which exhibited throughout their numerous range every variety from early formation, to the advanced period of ripening and discharge. The other abdominal viscera looked pale and unhealthy, communicating a sense of softness and flaccidity to the touch. Upon removing the lower jaw, the molar teeth were found to be loose and easily detached from their sockets. The jaw was carefully sawn through, and in front, at the roots of the incisor teeth, was a cavity filled with puriform matter, and opening externally by a small, jagged, irregular orifice, which communicated with a cyst under the jaw, containing also puriform fluid. The upper jaw displayed nothing peculiar, nor could I discover any traces of mischief in the various joints of the body which were subjected to examination. The brain and spinal chord though carefully searched, exhibited nothing unnatural.*

To endeavour to support by analogy the view which the preceding experiments suggested, of the action of ergot, and of the consequences resulting from its use, I performed the two succeeding experiments, which I think satisfactorily establish the inferences before drawn.

Expt. XXV.—A dog was given to me, which, only a few hours before, had broken its thigh about the middle of the bone. The hair was carefully shaven off, and the broken extremities of the bone were put into favourable apposition, and kept so by means of strapping, bandages, &c.

This practice, which would be scarcely justifiable in the human subject so quickly after the receipt of any injury, is allowable in the inferior animals, where feverish excitement and inflammatory disposition are never very urgent. But to guard against danger, the limb was carefully attended to, and every liability to inflammation obviated.

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* In this, as in the other experiments, I could discover no traces of inflammation along the arteries.

I need scarcely observe, that knowing how easily a scrofulous condition is engendered in rabbits, I took every possible precaution to obviate in this instance such an occurrence from ordinary sources. The room in which she was allowed to run was 18 feet by 16, and possessing every freedom of ventilation.

On the day of the injury he took an ounce of ergot, which quantity was repeated every day in three separate doses, for three weeks. During this time he grew very thin and meagre, the injured leg being reduced much below the others in bulk. Yet his appetite was tolerably good, but he looked emaciated and miserable, exhibiting in the weakness of his eyes, and the discharge from his nose, the symptoms described in the foregoing experiments. He was kept for a week after ceasing to take the ergot, and was then killed.

Upon dissecting the broken thigh, it was discovered that no union whatever had taken place, and the only apparent indications of restorative action were cartilaginous deposits at the ends of the fractured part. A large cyst was formed round them, containing a great quantity of purulent matter, and burrowing extensively into the adjacent muscular tissue. The main cavity had distinct boundaries, which, when touched, crumbled under the fingers, having a cheesy consistence.

Expt. XXVI.—A spaniel bitch that had met with a like accident in the fore-leg, was similarly treated, but the ergot was continued only during the space of a fortnight, in consequence of a large slough having formed, which rendered it unnecessary to protract the trial.

Upon examining the injured part there did not appear to be the least tendency towards reparation ; indeed the very irregular surface presented by the bone led me to infer that caries had commenced. A great quantity of purulent matter covered the fractured ends, implicating very extensively the neighbouring integument, and opening externally by a large irregular orifice. There was general emaciation of the body, but I did not discover any satisfactory marks of disease elsewhere.

I may further observe, that I have many times given ergot to animals having limbs weakened or crippled from injuries of long standing, and have invariably found such parts to suffer before any direct signs of constitutional disturbance were recognizable. In some instances I have found them, after a few strong doses, totally unable to use a limb in which only a little debility or stiffness had been previously discernible.

I have also intentionally wounded dogs that had been taking ergot for some time, whence has almost constantly resulted extensive sloughing, cavities deep and burrowing, cicatrices puckered in their formation, and dark-red or livid in their hue.

As I failed to produce gangrene in the previous experiments, I was induced, by the suggestions of some intelligent friends, to feed a dog entirely upon ergot, and the results were as follow, *Expt.* XXVII.—A mongrel dog, weighing fifteen pounds, was fed with two ounces of ergot daily, during the period of fourteen days. At the end of this time, the poor wretch was nearly starved to death—like Gonela's horse, "tantum pellis et ossa fuit." As no signs of gangrene appeared, I stopped the ergot, and attempted to recover him by good food, but the powers of life had been so much exhausted, that in a few more days he died.

I could discover nothing remarkable upon examination, except an inflamed appearance of the alimentary canal, and general emaciation of the body.

Dr Mackenzie has kindly furnished me with the results of a similar trial, which are as follows; "May 6th 1837, at 1 P. M. to a dog seven weeks old, I gave one ounce of ergot; he had had no previous food that day.

May 7th, gave the same quantity in the morning, and repeated it in the afternoon.

May 8th, 8 o'clock A. M. moaned much, and died in three hours afterwards.

Dissection.—Little ergot was found in the stomach; but in the mucous end of the cardiac portion, were several small places of softening, varying in size, the largest being equal to that of a pea. The powder was found along the greater part of the alimentary canal, apparently little acted upon, except at the *caput cæcum coli;* and yet the lacteals were not distended, as we generally find after starvation. The urine was very yellow; the gall-bladder was distended with green bile." The Doctor asks, "Might not similar appearances result from feeding an animal on sugar, &c. alone."

Various theories have been suggested to explain the *modus operandi* of ergot in its production of gangrene; but, without referring to the old notion of poisoning the blood by the introduction of putrescent matter therein, I think the sedative action of the ergot accounts for it;—especially as its impression seems to be chiefly directed to the spinal chord, diminishing not only the nervous energy of the system, but impeding the circulation; either liable, but both eminently so, to produce gangrene.

Entertaining this view, I tried the following experiment with foxglove, which, from the analogy it offers to those instituted with ergot, leads me to the inference, that the chief injury derived from the latter substance is referable to its sedative influence upon the animal system.*

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* In speaking of the sedative action of ergot, I do not wish to be understood to maintain, that the drug exerts an influence primarily sedative. The experiments already detailed will show the propriety of considering it strictly a narcotico-acrid; but, like many other poisons of that class, it is secondarily sedative, and in a much greater degree than the previous stimulus will account for. And by referring to the experiments on slow poisoning, it will be found, that after its employment had been protracted, scarcely

Exp. XXVIII.—I commenced giving to a bull-terrier dog, weighing twelve pounds, one drachm of freshly gathered leaves of foxglove, three times a-day. This I continued for a week, occasionally exhibiting a dose of castor oil to prevent accumulation, when, no signs of injury appearing, the quantity was augmented to two drachms. At the end of another week, his weight was diminished, he staggered in his walk, his coat was rough, eyes watery, the pulse feeble and intermittent, the surface cold, and appetite weakened. There were also shivering and slight convulsion. At the end of the third week, he could scarcely walk, his emaciation was excessive, though he ate with tolerable greediness. All the hair under his belly came off; and sensibility was much diminished, for he could bear slight wounds without manifesting any apparent signs of torture. The pupil was dilated, and unaffected by light; he became partially blind, and the sense of hearing was equally obtunded. The mouth was parched, and the urinary secretion was abundant. Two days before death, the body exhaled a fœtid, putrid odour. He had scarcely any feeling; he lay motionless, in a state of extreme exhaustion, and quite cold. He died towards the close of the fourth week.

I am not able to say what quantity of digitalis this dog took, for, living in the neighbourhood of its growth, sometimes it was given directly upon being gathered, and again, not before it was two or three days old.

Inspection.—The heart was small and soft, containing venous blood on the right, and arterial on the left side. The lungs exhibited marks of adhesion, but no tubercles were found. The mucous lining of the intestinal canal was inflamed, presenting occasional patches of a much darker colour than the rest. The kidneys were very soft and pale. The membranes of the brain were slightly injected. The pituitary membrane was thickened, and emitted a purulent offensive odour. The body rapidly decomposed.

External application of Ergot of Rye.—When applied to the sound skin, ergot does not appear to produce any sensible effects whatever. I have kept it in a state of moisture, in contact with the inner side of a dog's thigh, (the part having been previously shaven, and well washed with soap and water,) and repeated it night and morning for a fortnight without occasioning any perceptible alteration in the part, save a little redness. I have also worn it in a similar state, in contact with my own arm, for more than a week together, and have felt no inconvenience from its presence.

Applied to an abraded surface, however, it gives rise to profuse

any stimulus was observable; a diminution both of circulation and sensation almost immediately following each dose.

sloughing. I have tried it upon wounds nearly healed, and in less than twenty-four hours they have discharged purulent matter abundantly. The matter has generally been of a very offensive nature, and the wounds thus treated have, even under the application of proper curative means, been long and tedious in healing. In the form of powder it is very serviceable in arresting hemorrhage. Its mechanical influence has doubtless some share in the effect; but it does not entirely depend upon it, for the efficacy of flour, or any similar material, is not nearly so great. I have tried many comparative experiments, and have found the ergot succeed, when other simple powders have failed.

Even in the form of infusion, it has the power of arresting hemorrhage in an extraordinary degree. Whilst trying my experiments upon dogs, I repeatedly observed a subsidence of bleeding from the divided vessels of a wound, after a solution of ergot, from entering a vein with difficulty had trickled over the part. But I was not led to an investigation of the circumstance, until I saw a report of some interesting experiments upon the subject by Dr Müller.

He divided the popliteal artery in a sheep, and completely arrested the bleeding with lint dipped in an infusion of ergot. The caudal artery of a horse was cut, and the bleeding similarly subdued. The anterior crural artery was also divided, and its stream of blood with equal facility arrested.

To these experiments I may add, that I have several times divided the external jugular and the *vena saphena major* veins, and have never failed to arrest the hemorrhage by an infusion of ergot; though with arteries I have generally been less successful. And in the greater number of my experiments, I have used a dilute solution of ergot in the place of warm water, to sponge the incised parts, and have always succeeded in preventing that continued flow of blood, which is often a serious obstacle to the safe direction of the knife.

As I have never found any impediment to the healthy union of parts treated with an infusion of ergot, I have no hesitation in advising it as a valuable means of preventing the troublesome hemorrhage from small vessels, in the course of surgical operations.

And upon the same principle, I believe the injection of a similar solution into the uterus, in cases of flooding, will be found to answer every practical end that can be wished for.

SECTION IX.—*Obstetrical History of Ergotted Rye.*

There is no doubt that ergot was employed as a therapeutic agent at a period far antecedent to that at which the medical history of rye thus diseased is found to commence. It has been previously observed, that various other plants are liable to this form of degeneration; amongst which are several species of Arundo; and in the Pharmacopœia for 1660, the Diapenidion reed is found to enter into the composition of an electuary recommended in menorrhagia and hemoptysis, and it is generally supposed that such properties were dependent upon the presence of ergotted portions.[*] The Junci are also liable to this disease; and Gerard in speaking of them says, "The seeds of rushes dried at the fire, and drunke with wine, stayeth the laske and the overmuch flowing of women's termes."[†] These properties, not ordinarily possessed by such vegetables, are very likely, when present, attributable to their being accidentally ergotted.[‡]

For more than two centuries, ergot of rye has been known to possess the property of expediting the process of labour when given after the commencement of uterine action; and with such intention it has been extensively used by matrons, empirics, and legitimate practitioners. From this property it has been distinguished by the names "*pulvis parturiens*,"[§] "*pulvis partum accelerans*,"[‖] "*poudre obstetricale*," and "*poudre ocyotique*."[¶]

The earliest account we have of its obstetrical employment is from Camerarius, who states that, about 1668, it was used by matrons in Germany, to hasten the process of labour.[**]

In 1747, an accoucheur in Holland acquired great celebrity from its use, but it does not appear that it was a very popular remedy; and it was some time ere his secret, which was held with all the pertinacity of empiricism, became generally known.

In 1774, from its reputed virulence, its use was proscribed in France by legislative enactment. Nevertheless, it continued to be secretly employed in that nation by a few zealous practitioners, and particularly by a Madame Dupille, who subsequently extolled its virtues highly. At this period it was also used in America by the midwives, who administered it under the name of "blasted rye tea."[††] And the matrons of Scotland are said to have employed it very extensively about this period; though so much superstition appears to have been interwoven with obstetric history, as to render many of its features exceedingly doubtful.*

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[*] I think this is somewhat doubtful, for we find the roots of the same vegetable employed with a like intention. Vogel, in speaking of the *Arundo vulgaris*, says, "Nostro anno prorsus negligitur, præterquam quod Deidierium, decocto usum esse ad provocandos menses retentos legam;" (Hist. Materiæ Medicæ, p. 232.) alluding to its emmenagogue properties, which are also said to be possessed by ergotted rye.

[†] Herbal, Lib. i. p. 36.

[‡] Morgagni mentions the *Leucoion Luteum vulgare*, as having properties similar to those of ergotted rye. (Letter 48, art. 41.)

The Lolium or Darnel, as its derivation implies, δολιος, deceitful or adulterine, the δ being changed into λ, *euphoniæ gratia*, was anciently found to be the subject of ergot. And hence perhaps its reputed powers. Gerrard says, "it causes drunkenness when eaten in hot bread, when taken in wine it stayeth the fluxes of the matrix." According to Dioscorides, "a fume made by darnel, barley, frankincense, saffron, and myrrh, applied to the belly, healeth conception, and facilitates the birth."

[§] Stearns. [‖] Desgranges. [¶] Bordot.

[**] Actes des Curieux de la Nature. 1668. Art. 6. Obs. 82.

[††] London Med. and Phys. Journal, 1825, Vol. liv. p. 3.

In 1777, Desgranges, an accomplished accoucheur at Lyons, extolled its efficacy, published many luminous reports of its activity and usefulness, and eventually succeeded in bringing it into general use.†

For some years it maintained its character, and in 1787 was much praised by Pawlisky; (Baldingers, Neue Magazin, Tom. xi. c. 1, p. 44, and Lancette Franc. Tome viii. p. 164,) but its reputation again declined, and at the commencement of the 19th century, it was in that state of unmerited disuse, into which valuable remedies are often allowed to fall, through the unseasonable praises and unqualified abuse which they are equally compelled to sustain.

But in 1807, the attention of the medical world was again directed to the merits of this drug, by the publication of Dr Stearns's (of New York) letter to Dr Akerly, in which he fully illustrated its therapeutic values, and demonstrated its claims to general employment.

In 1813, Dr Prescott read a paper‡ before the Massachuset's Medical Society, which contributed much to confirm the views of Dr Stearns, and to extend the employment of the medicine. Since then, its reputation has only been equalled by its use, and we now find it, as we trust it will ever remain, one of the most popular articles in the Materia Medica.

SECTION X.—*The value of Ergot as an obstetrical agent considered.*

The character which this medicine early obtained for its speedy and efficient action in promoting the expulsion of the fœtus, has long been substantiated by the almost unvarying testimony in its favour, afforded in the united experience of its many successful employers. But, as might be expected, a little diversity of opinion has prevailed regarding its merits.

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* Thus we find an old author declaring the sterility of all the females in one of the Orkney Islands. "Mulieres hic steriles sunt, et si gravidæ evenerint, nunquam cum vita pariunt." A church, however, dedicated to the Virgin Mary, was a propitiation commonly resorted to. (Ben Orchadiarum Insularum Descriptio, ad an. 1529, in MS. v. Dairsay.)

Enchanted powder is also spoken of, which was directed to be put into the hair for the relief of labour-pains, and the expediting of parturition. (Trial of Eufane Macalyane, 9th June, 1591. Rec. Inst.)

The *Ovum anguinum* was said to "give ease to women in child-birth, by being tied about the knee." (Penant, Tour in Scotland, and Voyage to the Hebrides 1772, p. 298.)

Margaret Stewart exhibited "ane quhyt stane of crystall, guid for seik women in their travell." (Halyrudhous, K.S.R. July 8th, 1628.)

A stone kept in St Ronan's Chapel in the Isle of Rona, had the supposed power of facilitating delivery. (Martin, Western Isles, p. 21.)

A small round stone, not larger than a plum, was described to Wodrow as "helpfull to severall weemen in childbirth." (Wodrow, Analecta, in MS. 5. 3. p. 83.)

† Gazette de Santé, 1777. See also Bulletin de la Faculté, Tome vi. p. 23.

‡ This paper was reprinted in England, and shortly afterwards translated into French by M. Charbonnier.

Some have alleged, that, no matter how eligible the circumstances, or how adaptable the dose, no uterine action has followed its administration. Such have, therefore, stigmatized it in the open avowal that it is useless and inert. Of this class is Le Mercier, who says, that he found it altogether inefficacious when given, either to quicken the birth of the child, or to expel the placenta. Le Maire Lysancourt, at a meeting of the Section of Pharmacy of the Royal Academy of Medicine, maintained after Beclard, that ergot possesses none of the advantages attributed to it; an opinion, however, ably refuted by Caventou and Chevallier. Basset and Legouais declare that it is useless, and that it has sometimes appeared to do good by being given just at the period when uterine action was beginning to increase. Dufes says that it is absolutely inefficacious; and M. Chaussier, when officiating as Professor at the reading of M. Bordot's thesis, drew up a memorandum upon it, to the effect, that, after many trials, he had come to a practical assurance of its inutility. And Madame La Chapelle, after years of experience, declares respecting it " son innocence est sa plus grande vertu."* Desmoreaux† and Gardien ‡ both express their doubts upon its supposed power of exciting uterine contractions; and M. Capuron stated to the Academie de Médecine, in a memoir, that he regarded ergot " as a drug which it is requisite speedily to expunge from the list of the Materia Medica,"§ simply because he thought its phosphoric acid would disorder the stomach.

Others, on the contrary, have found it to be so rapid in its action, and so energetic in its effects, that they have described it as too violent a remedy to employ—its impression being destructively transmitted from the mother to the infant, in some instances even involving both in the same sacrifice. Thus Dr Houston says, " it has caused several fatal demonstrations, and from what I have seen and heard, that more children have perished by the injudicious use of ergot during the few years which have followed its introduction into the practice of this country, than have been sacrificed by the unwarrantable use of the crotchet for a century past."‖ Again, it is said that there are many instances in which it does good; " but from what we know of the very hasty and indiscreet manner in which it has too often been resorted to, we fear that its introduction into obstetrical practice has, upon the whole, been productive of more harm than good."[*] Dr Hosack, in his letter to Dr Hamilton, says, "although no evidence existed previous to the use of this medicine that the fœtus was not living in every case in which it was administered, the child was stillborn."[†] Dr William Moore, of New York, remarks, "it appears to be injurious to the child at all times."[‡] Dr Holcombe, in a letter to Dr Dewees, reprehends the employment of scruple doses, asserting that, when given to that extent, he has seen "several fatal demonstrations of its impropriety."[§] MM. Evrat and Moreau have both certified that it destroys the child. Hall states, that whenever ergot fails to excite uterine contractions, it produces more or less constitutional derangement,—an opinion which Neale altogether denies.[‖] But I think the former opinion a very justifiable one, from the many instances which we have of its powerful impression upon the nervous system. Mr Smith of Chertsey relates a case, in which a parturient female to whom the ergot was given, exclaimed in anguish, only a few minutes after taking it—"What have you given to me?—It flies all over me like lightning." Michell also gives an instance where the woman asked what she had taken?—exclaiming, "I am dying!" And Broussais has wisely remarked, that this medicine must sometimes produce painful impressions on the nervous system.[¶]

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* Accouchemens, Tome i. p. 52. † Dict. de Med. Tome i. p. 224.

‡ Traité d'Accouch. etc. Tome ii. p. 253. 2d edit.

§ Transact. Med. Tome viii. p. 77.

‖ North American Med. and Surg. Journal, January 1829.

Others, however, contend that the ergot may, if judiciously exhibited, be always given with advantage, the safety of the mother or of the child being never endangered. Of this opinion is Michell, who says, "I consider it to have saved the lives of many children, and were it introduced into general practice, the death of a woman in childbed would never be heard of."[**] Dr Church, whose experience entitles his opinion to some acknowledgement, says, he has "not observed that the ergot in any case caused the death of the child."[††] To these names may be added those of Godquin,[‡‡] Voillot,[§§] Campaignac,[‖‖] Guersent,[¶¶] Doumerc,[***]—Desgranges, Chevreul, Bongiovanni, Bigeschi, Balardine, Henrischen, Davies, Clarke, Mackenzie, and numerous others. And if my own testimony may be at all worthy of regard, as tending to the validation of what has been previously adduced, I would venture to remark, that I have never seen a case justifying the conclusion, that mischief has followed the cautious employment of ergot; nor should I, from my own experience, consider it a medicine, the exhibition of which, in a judicious manner, would be at all likely to injure either parent or offspring.[*]

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[*] North American Med. and Surg. Journal, Jan. 1829, quoted in the Lond. Med. and Phys. Journal, N. S. Vol. ii. p. 258.

[†] Lond. Med. and Phys. Journ. Vol. vii. p. 183.

[‡] Loc. sup.

[§] Ibid. p. 181.

[‖] Researches on Ergot, 8vo, Lond. 1828, p. 60.

[¶] Quoted in the Lancet, 1827-8, Vol. ii. 278.

[**] On the use of Ergot, p. 78.

[††] Practical Observations on Ergot, Philadelphia Journal, May 1824.

[‡‡] Thése, No. 244, Paris, 1832.

[§§] Bibl. Med. Tome ii. p. 251.

[‖‖] Repert. Med. 1831.

[¶¶] Lancette Franc. Tome i. p. 90, Tome iv. p. 6.

[***] Thése, No. 122, Paris, 1830.

Its tendency to injure the child when given during the parturient stage only, I can scarcely believe, unless the impression be mechanical, and the fœtus be hurt from the contractions of the uterus upon it; or, from a disproportion between the external parts and the fœtus, the head suffer from being impacted in the pelvis. But if freely given for some time prior to the period of delivery, I am fully inclined to the opinion that it may, by deteriorating the health of the parent, so communicate its influence to the offspring, as actually to destroy its life, or materially to reduce it in strength and soundness. For in giving it to pregnant animals at intervals varying from a few days to as many weeks antecedent to delivery, I have almost always found the produce injured or destroyed in consequence. And Dr Holcombe is of opinion, that it may be advantageously given to reduce the size of the child in cases of contracted pelvis. This experiment he has tried, and in one instance the weight of the child was reduced to five pounds and a half; the previous ones of the same mother had been above ten pounds.[†]

Another charge against the ergot, and one which seriously impugns its practical character, is its tendency to produce abortion. M. Gerardin, in a paper read before the Academie Royale de Medecine, says, that, in the colonies, it is regarded as a sure means of producing abortion, and of destroying the life of the *fœtus in utero.*[‡] And it was a belief in its possessing this property which induced Pelletier and Planche, in a report to the French Minister of the Interior, in the name of the Royal Academy of Medicine, to advise its exclusion from practice. Lorinser also, as quoted by Hufeland, firmly maintains the opinion, that it will bring on premature labour; which view is also entertained by Rose and Guibert. Waller states, that he knew a case in which abortion was wilfully produced by a female two months pregnant taking it.[§] And Goupil says, as it is capable of provoking abortion, it should never be given without the sanction of a medical practitioner.[¶] Mr Corry of London says he has produced uterine action in a female seven months pregnant, by administering ergot; but it does not appear to have extended itself to abortion.

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[*] In some instances of amenorrhœa and of illegitimate impregnation, ergot has been given to the extent of quarter of a pound in twenty-four hours, without producing any injurious effects upon either the mother or the child.

[†] Journal of Medical Sciences, 1826. No. 3, p. 448.

[‡] Revue Med. Septr. quoted in Lond. Med. and Phys. Journ. Vol. lii. p. 530.

[§] Neale on Ergot, p. 78.

[¶] Journal des Progres des Sciences.

Mr Ingleby says, that in two instances he prescribed it with the intention of producing abortion in cases of projection of the sacrum, and that it "clearly originated uterine contraction."[*] In one instance the child was dead, in the other living. And Drs Ramsbotham [†] and Merriman [‡] believe that it will produce abortion. The latter author also says, that where the fœtus has been sometime dead, and putrefaction to any extent has taken place, the remedy is altogether inert. [§] But when it is remembered that ergot will expel the placenta after its protracted retention, [||] we may imagine the expulsion of a dead fœtus to be possible, and indeed we have cases illustrative of it. [¶] In some instances, however, it fails to detach the placenta. M. Delaporte, D. M. of Vimontiers, details the expulsion of twins by ergot, but no succeeding doses would detach the placenta.[**]

The testimony in favour of its powerful action upon the uterus at any period of impregnation, certainly forms a strong contrast with the preceding reports declarative of its innocence. But in support of its inability to induce premature labour, we have the experience of Prescott, who maintains that it never occasions abortion.[††] Dr Hall of St Albans has given it to a female threatened with miscarriage and reduced by hemorrhage, in whom the symptoms of abortion quickly subsided, and she went through the usual period of pregnancy. And Michell reports a case in which six drachms of ergot were given to a female eight months pregnant, but no signs of premature labour succeeded.[‡‡] Chatard and Balme distinctly state that it has no influence upon the uterus, unless the action of that organ shall have already commenced. Villeneuve says it is not proved that ergot will produce abortion, for many women have taken it in large doses with impunity.[§§]

My own observation does not justify me in saying whether or not ergot will induce abortion in the human subject, never having had occasion for its employment; but I have seen many instances in which its administration in the earlier period of parturiency was not followed by any increased uterine action; and by a train of analogical reasoning, I should certainly infer that it has no tendency to induce permature delivery. And I believe the experience of most practical men is in favour of its increasing, but not originating, the pains of labour. This I believe to be the rule, but it is no doubt liable to exceptions.

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[*] Ingleby's Obstetric Cases, p. 233. [†] Lond. Med. Gazette, 1834, June 28.

[‡] Synopsis, 4th edition, p. 198. [§] Ibid.

[||] Dr Worrel, of the U. S. army, gives the case of a female whose placenta was retained for three days, and five doses of ergot (fifteen grains each) brought it away.

[¶] London Medical Gazette, 1829, Vol. iv. p. 100.

[**] Bull. Therap. quoted in the London Medical and Surgical Journal, 1832, Vol. i. p. 453.

[††] American Medical Recorder, No. 20. [‡‡] Essay on Ergot, p. 110.

[§§] Mem. p. 28, 73, and 112.

It has even been stated that ergot is capable of either expediting natural delivery, or of occasioning its premature advancement in the inferior animals; and rye-bean is said to have acquired amongst farmers the character of being able to produce abortion. (Med. Repository, N. S. Vol. i. p. 265.) Possibly from its containing ergot. In southern France it is said to be given with success to cows to promote natural labour; and Mr Dick, Professor of Veterinary Surgery in Edinburgh, informs me that he has known ergot to hasten labour in cows, when given after the commencement of uterine action. Oslere, an American physician, declares that it will produce abortion in the lower animals as well as in women.[*] Chapman reports it as a fact, but without giving any proofs, that, when administered to pregnant animals, it never fails to induce abortion. Chatard, however, contradicts this, and adduces an instance in which an ounce of powdered ergot was given to a sow about to "farrow," which only augmented the secretion of urine and produced agitation. Three ounces given in two days to a she goat, near the time of parturiency, failed to excite uterine action. Three ounces, given in the space of two days to a young sow about the middle of gestation, caused no remarkable symptoms. Four ounces given to a cow, four months with calf, produced only a loss of appetite. Wasener give it to a bitch with young, which went to its full time and pupped safely. This experiment was repeated by Dr Villeneuve, and with the same results. M. Combes made similar trials upon bitches, with the same effect, but in one instance the ergot occasioned violent agitation, with considerable loss of blood, and the expulsion of four puppies. But not having mentioned the period of gestation, his experiment is invalidated for want of precision.[†]

Imagining from the contrariety of opinion prevalent upon this subject, that it was still open to investigation, I performed a series of experiments in connection with it, which, divested of any comment, I shall now detail, leaving the facts simply as they occurred to me, to the consideration of my readers.[‡]

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[*] Lond. Med. and Phys. Journ. N. S. Vol. viii. p. 84.

[†] Neale on Ergot, Ch. 14. p. 89.

[‡] Some might consider it requisite that the contraindications to the obstetrical employment of ergot should be given; but as they abound in all works on midwifery, and ought to be known to every accoucheur, I do not feel justified in occupying any time by quoting them.

A much more philosophical theme is comprised in the question, how does ergot influence the uterus? It is a subject which I have long studied; but the discrepant reports made by different authors upon the effects of ergot will not yet allow me to decide upon it. But I must acknowledge that I am not a convert to the doctrine of its specific action upon the uterus, though I am fully convinced of its power in expediting natural labour. We know that where an exciting body is present, as for instance in the stomach, whatever depresses the system, or exerts a sedative influence upon it, will favour the activity of the excited organ. Thus, when an individual is only slightly intoxicated, sudden fright or disappointment will turn him pale, and

SECTION. XI.—*Experimental Inquiry into the tendency of Ergot to induce premature labour in the Inferior Animals.*

Expt. XXIX.—A doe rabbit, immediately after impregnation, was compelled to swallow two drachms of ergot, which quantity was daily repeated for a fortnight, and then omitted. The animal went its usual time, and then produced five young ones, in a well matured, and apparently in a healthy state.

Expt. XXX.—I administered to a rabbit the day after its impregnation, three drachms of ergotted rye, and repeated it daily, until the period of gestation had expired, and the young ones were to all appearance unaffected by the drug.

Expt. XXXI.—This inquiry was prosecuted in a manner similar to the last, only the dose daily given was one ounce, administered at three separate times. The rabbit was obviously affected, but her appetite being good, and her flesh abundant, I inferred that the young ones could not suffer from want of nutriment. At the common period she brought forth six little ones, two of which were dead, and no doubt recently; four were alive, but they were very meagre, and died on the following day.

The mother was put to the male rabbit the day after delivery, and allowed to go through the next period of gestation without taking any ergot, but the produce, though more healthy than before, exhibited very decided marks of innutrition, and they all, with one exception, died within a month.

Lest any uterine action, not amounting to abortion, and therefore overlooked, should have followed the administration of the ergot, I performed the following experiment at the suggestion of my friend, Dr Hutchinson of Nottingham. This inquiry was pursued under the impression that it was possible for the uterus to be influenced by the ergot, and yet the action to be so trifling as not to be discoverable through the parietes of the abdomen.

Expt. XXXII.—To a rabbit, two days off delivery, half an ounce of ergot was given, suspended in water. After waiting for quarter of an hour without discovering any signs of uterine action, the animal was stupefied with carbonic acid gas, the abdomen then laid open, and the uterus fully exposed. No motion

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faint, and he vomits. On the contrary, the best means of obviating drunkenness, is to relieve the local excitement, by giving it a general diversion; hence the sobering influence of ammonia. May not the sedative action of ergot upon the system favour the disposition of the uterus to expel its contents, and so facilitate delivery by a general, instead of a local impression? We know that, after a hard day's labour, in the evening, when depression prevails, women are often prematurely delivered. And bleeding, as also nauseants, and opium, when it does not stimulate, expedite labour. The subject, though a difficult one, is wonderfully supported by analogy; but as its investigation would lengthen this paper too much, I shall reserve it for a subsequent occasion.

whatever was discoverable, except what arose from an occasional struggle of the young ones, which to the amount of half a dozen, were then alive in the cavity of this organ.

This experiment I repeated twice, and with similar results.

Expt. XXXIII.—Fearing that the carbonic acid gas might have occasioned some impediment to the full influence of the ergot, I gave to another rabbit, upon the day which should have terminated its period of utero-gestation, four drachms of this substance. I waited for twenty minutes without observing any expulsive efforts, and then administered four drachms more. I waited for half an hour, when, observing no uterine action, I injected a tolerably strong solution of ergot into the right external jugular vein, to deprive the body of sensibility, and so to favour my design. When all signs of feeling had subsided, I opened the abdomen, (the animal being still alive) but the uterus showed no indications of augmented action, and I consequently inferred that no direct impression had been communicated to it.

Expt. XXXIV.—I gave to a sow, seven weeks pregnant, one ounce and a half of ergotted rye, but no symptoms of abortion followed, and, at the usual time, she brought forth a fine litter of young ones, all of which lived, and grew well.

Expt. XXXV.—A spaniel bitch, a few days before pupping, took half an ounce of ergot. There were no signs of abortion, and at the end of five days she had six young ones, two of which were dead.

Expt. XXXVI.—A similar quantity of ergot was given to a cat, which, from its size, was obviously not far from terminating its period of utero-gestation. She retained the dose for about twenty-five minutes, and then vomited severely. There was considerable agitation for about two hours, at the end of which time another dose of two drachms was given. This was retained on the stomach, but it failed to induce abortion. Upon examining the young ones produced a few days afterwards, I could discover no palpable signs of their having suffered from the experiment upon their mother.

Expt. XXXVII.—Half an ounce of ergot was administered to a terrier bitch, about five weeks gone with young. It produced no immediate effect, but the puppies, which were expelled at the usual time, were small and sickly, and two of them died on the second day.

Expt. XXXVIII.—A bull-terrier bitch took half an ounce of ergot daily through the last three weeks of her pregnancy. She went to the full time, and then gave birth to seven young ones, three of which were dead, and the others, weak, meagre, and scarcely able to stand, died in a few days afterwards.

I have also given ergot to animals in the early period of utero-gestation, and though in some instances all the young ones have been brought forth dead, yet I have not been able to satisfy myself of their having died at a period far antecedent to that of delivery. In one instance only was the term of pregnancy shortened. In this case the bitch pupped about nine days before the usual time; the young ones were all dead, and appeared to have been so for some days. This animal took about five ounces of ergot in three weeks.

Expt. XXXIX.—To a bull-terrier bitch, whose period of gestation was nearly completed, three-quarters of an ounce of ergot were given. She retained the dose for half an hour, and then ejected it by violent and continued vomiting. On the following day, no signs of abortion having appeared, she was bled to eight ounces, to reduce the energies of the system, and so if possible to favour the operation of the drug, which was subsequently given in the dose of half an ounce. This was retained for several hours, producing great prostration of strength, failing of the hind-legs, and an excessive discharge of frothy saliva, which continued for two hours and a half. No signs of abortion succeeding, a similar quantity was again administered on the evening of the same day, and with similar results. In three days afterwards, she brought forth five puppies, all of which were dead.

Expt. XL.—A bull-terrier bitch was watched until the period of delivery had arrived, and, when two young ones had been expelled, half an ounce of ergot was given to her, which appeared to produce almost immediate effects. She cried loudly, and bent her head back in agony, at which time another puppy was forcibly expelled. In a few minutes, violent convulsion of the abdominal muscles came on, with symptoms resembling hiccup. There was much frothy discharge from the mouth, and the pupil was strongly contracted. For three hours she continued to be distressed in her breathing, and was only able to raise herself upon her fore-legs, the hind ones being in a state of paralysis.

Towards evening the symptoms had slightly abated; she drank plentifully of milk, but refused solid food. On the following day there was less hiccup, and her breathing was easier. About midday she parted with another puppy, which was dead. Thirst was very urgent, but she would not eat solid food of any kind. Throughout this day she continued in the same condition, and in the evening the pulsations of the heart, previously indiscernible from the concussion of the chest, were now found to be slow and feeble. She was unable to stand, the surface gradually became colder, the eye acquired a fixed and glassy stare, and at three o'clock on the following morning she died, having survived the first dose forty-one hours.

Inspection.—The uterus contained two dead puppies; no marks of inflammation were discoverable in it or in any of the abdominal or thoracic viscera. The membranes of the brain were deeply injected, and the vessels upon the surface of the brain were congested.

Expt. XLI.—I kept a bull-terrier bitch that was with young until the time of pregnancy had expired, and on visiting early one morning I found her pupping. Two young ones were born, when I gave to here three drachms of ergot, which produced no apparent effect. In half an hour I gave to her four other drachms, the influence of which was equally imperceptible. At the expiration of two hours from the last dose another puppy was born, which appeared in no degree to be affected by the ergot the mother had taken. The bitch looked drowsy, and frothed considerably at the mouth. In the evening, thirteen hours from the last dose, two more puppies were expelled, both of which were dead.

This experiment I have several times repeated, and with similar results. Expt. XL. is the only instance in which I have noticed any thing like an influence upon the uterus by the ergot, and that case has a very doubtful appearance.

In addition to these, I may add that I fed a bitch, suckling three puppies, with ergot to the extent of an ounce daily for a fortnight, but I was not able to discover any particular impression upon the young ones. They lost a little flesh, and appeared to be weak and feeble, but I suspect it was merely the consequence of the debility of the mother, and not referable to the influence of the ergot upon them. When it was suspended the mother began to improve; they did likewise, and, in a few weeks, appeared to be no worse for the experiment.

I have also given ergot in the form of enema, in doses varying from half an ounce, to one and a-half ounce, but have never succeeded in producing even the appearance of abortion. In one instance only, out of many trials, were the puppies thus sacrificed, and in that case six ounces had been given in four injections. But I have always observed the ergot to produce a much more powerful effect, especially upon the brain, when given either by the mouth or by the rectum, to animals with young, than when administered to such as were unimpregnated.

Expt. XLII.—To a spaniel bitch, one or two days before pupping, three drachms of ergot were given, which produced no sensible effect. In half an hour afterwards, I administered half an ounce, and it proved equally inefficient. In fifteen minutes after the last dose, the animal was stupefied with carbonic acid gas, and the abdomen then opened, and the uterus exposed. It was found to be perfectly still, except when moved by the young ones, which were yet alive in its cavity.

Expt. XLIII.—A solution, furnished by three drachms of ergot in two ounces of water, was injected into the right jugular vein of a terrier bitch, whose period of gestation, from her enlarged teats and copious secretion of milk, I inferred was near its completion. This injection produced a train of symptoms resembling these previously described; the paralysis continued for above two hours, no abortion followed, and the animal died without any appreciable influence having been communicated to the uterus. She was opened immediately after death, but all the young ones were dead.

I repeated this form of experiment upon another bitch, and after having allowed her to remain one hour and forty minutes (sensibility being gone) her abdomen was opened, there was no uterine action, and all the puppies were dead.

This train of investigation I have been particular in describing, because I am aware that the conclusions are at variance with many that have already been submitted to the scientific world. Dupuy is said to have facilitated calving by injecting a solution of ergot into the veins of a cow. Percy and Laurent state that a similar decoction mixed with half as much brandy, and injected into the veins of a cow, expedited the process of parturition.*

My own experiments, it will be seen, do not correspond with these, nor am I able to account for the difference. I have candidly stated the facts, and without any comment I leave them.

SECTION XII.—*General therapeutic employment of Ergot.*

Expulsion of foreign bodies from the Uterus.—For this purpose ergot has often been employed with advantage. It has been given in hydatids of the uterus, and has succeeded in expelling them in a few minutes.†

Clots of blood, which often remain in the womb after delivery, are in general readily expelled on the administration of ergot. Waller gives a good illustration of its powers, in the recital of a case which fell under the notice of Mackenzie. Several large coagula remaining in the uterus of a female who had been recently delivered of twins, were evacuated in half an hour after the ergot had been given.

Uterine Hemorrhages.—I believe the American physicians first discovered the value of ergot in these dangerous and often intractable states. Chapman, Stearns, Dewees, Hosack, and Church, speak of it in the highest terms, and some even regard it as a prophylactic. Their views have been ably supported by Bigeschi in Italy, by Goupil, Bordot, and Prefet in France, and by a vast number of able and accomplished practitioners in our own country.

A very good instance of the cure of hemorrhage in the fourth month of pregnancy has been related by Mr Board of Bristol.[*] And Mr Ker of Manchester[†] has recorded a very interesting case of the value of ergot in *prolapsus uteri.*

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* Neale on Ergot.

† Lond. Med. and Phys. Journ. Vol. iv. p. 545.

In hematemesis it has also been found serviceable. Mr Ings of Henly, Warwickshire, relates the particulars of a case which he succeeded in curing with it.[‡]

In hemoptysis, hematuria, and epistaxis, it has been employed by Drs Spairani and Pignacea, with notable advantage.[§]

Dr Ryan speaks highly of its use in gonorrhœa, and imagines that it excites a powerful influence upon mucous membranes.[‖] It has also been extolled in gleet; but here I think its efficacy somewhat doubtful, or it requires confirmation.

Puerperal Convulsions.—Dr Stearns particularly advises the employment of ergot in protracted labours, which either are or are likely to be attended with convulsions.[¶] Dr Waterhouse appears to have used it with success in the convulsions consequent upon delivery. Dr Holcombe is further of opinion that it will prevent puerperal fever.[**]

Diarrhœa.—In both the acute and the chronic form of this disease it has been given with advantage. I have seen it in doses of five grains three times a day effect a very desirable change in one instance, where symptoms of a dysenteric nature were coming on. And Dr Stout of Bethlehem, Pennsylvania, speaks in high terms of its use.[††]

Amenorrhœa.—In this affection ergot has been employed with advantage by Dr Beckman, although it is said, and particularly by Lentin and Taube, that amenorrhœa is generally attendant upon ergotism.[‡‡] Dr Davies is of opinion that it is serviceable in these cases, though Prescott positively affirms that it is not. To the testimony, however, of Drs Beckman and Davies, I may add that of several respectable physicians of my own acquaintance who have repeatedly seen the deranged menstrual function duly restored by a persevering use of ergot.[§§]

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[*] Lancet, 1827–8, Vol. ii. p. 337.

[†] Lond. Med. Gazette, 1834, June 26, p. 604.

[‡] Ibid. 1834, February 1st, p. 672.

[§] Medico-Chirurg. Review, N. S. Vol. xv. p. 171.

[‖] Lond. Med. and Surg. Journ. 1833, Vol. iv. p. 590.

[¶] American Medical Recorder, No. 20.

[**] Anderson's Journal of the Medical Sciences for 1826, No. 3. p. 448.

[††] Lond. Med. Repos. 1823, Vol. xx. p. 151.

[‡‡] Neale, p. 7.

[§§] And if this property of ergot be, as we have every reason to anticipate, general, it will perhaps tend to explain the marvellous influence at one time imputed to beans. The occasional effects induced by them may have arisen from ergotted portions; the apparent extravagance characteristic of the detail will be excused from the mystical age through which this tradition was compelled to circulate, ere it was formally represented upon the pages of history.

Beans were at one time considered aphrodisiac, for which reason Tiraquellus imagined that they were interdicted to the Flamen Dialis, or high priest of Jupiter

Solutions of ergot have also been applied externally for remedial purposes.

"A falling of the upper eyelids followed an attack of erysipelas. The eyelids were recommended by M. Carron to be continually wetted with a warm infusion of ergot of rye in boiling port wine, (quatre gros de seigle ergoté dans du vin rouge bouillant.) The cure was completed in two days."

"Paralysis of the eyelids from partial asphyxia following the respiration of charcoal fumes, was cured in eight days by fomentation with an aqueons infusion of ergot." Medico-Chir. Review, No. 60, April 1, 1839, p. 613.

The active principle of ergotted rye will be treated of in a subsequent paper.

ART. II.—*Observations and Experiments on the mode in which various poisonous Agents act on the Animal Body.*

By MR JAMES BLAKE.

THE subject of the following researches is one, the importance of which is fully attested by the attention it has received from physiologists. The action of poisons on organized beings has always been considered as a valuable means for elucidating some of the more important phenomena they present; and the facilities which this class of substances affords us of destroying or modifying some of the more complex functions of animals, renders them valuable agents in attempting an analysis of these functions. These circumstances have invested with so much interest the question as to the manner in which poisons produce their effects; and although many researches have been undertaken with the view of elucidating this question, the conflicting opinions still entertained on this point, afford sufficient proof that much still remains to be discovered in this branch of physiology.

Of the many opinions that have been entertained on the manner in which poisons produce their effects, there are only two which it is now necessary to notice, as they express the views of by far the greater number of physiologists of the present day.*

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at Rome. And some commentators regard a relative passage of Plutarch's Roman Questions, as comprehending peas and vetches. (Tiraquellus, Glossæ Primæ, p. 15, § 123, Lugduni, 1628, in fol.; Plutarch, Questiones Romanæ, T. vii. p. 183, 8vo.) Carena describes the punishment of an old woman who was whipped through the city of Cremona for having endeavoured to influence the affections of a young man, by giving him beans over which mass had been celebrated.—Carena, Annotationes, § 14, p. 499, ap. Pegna, Praxis Inquisitorum.

* In using the word poison in these researches, I would be understood as apply-

According to one of these opinions, before a poison can produce any general effects, it is essential that it should be mixed with the blood circulating over the body, and thus brought into contact with the nervous tissue, or, at least, that the poison should, in some manner, be strictly applied to the nervous centres.

The other opinion to which I have alluded is, that these poisons modify or destroy the functions of the nervous system, by an impression made on the nerves of the part, to which they are directly applied, and which, being transmitted to the nervous centres, may destroy these functions independently of any contact of the substance with the nervous tissue generally.

In bringing forward a series of experiments in order to elucidate this question, I would not be understood as laying claim to any credit for originality in these experiments, as most of them have been performed by former physiologists. My only reason for here detailing them is, that in these researches they have been observed with a definite object in view, and in order to furnish data which are not to found in those already published. The same remark will apply to the conclusions I have drawn from those experiments which are in accordance with the opinions entertained by many distinguished physiologists, although opposed by some of our highest toxicological authorities, and also I think by the greater number of physiologists in this country. As the opinion which would ascribe the general effects of a poison to an impression made on the part to which it is directly applied, is in opposition to the conclusions to which a careful investigation of the subject has led me, I shall take a short review of the evidence adduced in support of this opinion. This is of two kinds; that afforded by direct experiment, and that deduced from the consideration of certain pathological and physiological facts.

I. I shall at once proceed to notice the latter, leaving any remarks on the experimental evidence until I shall have related those experiments which I have performed on the subject.

The most important pathological facts brought forward are;—*1st*, the sudden manner in which certain morbid effluvia have been stated to affect the human body; *2dly*, cases of sudden death taking place after the receipt of a slight wound; and *3dly*, the production of tetanus by the mere local irritation of a nerve. *1st*, The facts brought forward in support of the first statement are derived from the sudden effects which are stated to have been produced by the effluvia proceeding from certain fomites of plague. Instances are reported in which persons have fallen down, and instantaneously expired, whilst conveying these supposed fomites from the ships. The validity of these statements cannot, I think, be allowed, after

ing it exclusively to those substances which appear to destroy life by their effects on the nervous system.

the valuable information which has lately been communicated to the public on this subject by Dr Bowring, who has been an eye-witness of the disease in its worst forms, and who has been led to conclude that it is not infectious. Should the report in question have any foundation, it will probably be owing to mere coincidence of sudden death taking place at a moment when the person was so employed. *2dly*, The same remark will apply to cases brought forward of sudden death produced after the receipt of a slight injury. Such cases must be exceedingly rare, as Professor Cooper, a gentleman who has had most extended opportunities of observing such cases, did they really exist, informs me that he has never met with an instance of death suddenly following a slight injury. *3dly*, In regard to tetanus I would observe, that we are not justified in concluding, that the whole of the morbid phenomena are the result of the mere local irritation of a nerve. It is highly probable, that some pathological state has been propagated from the injured nerve to the nervous centres, before the violent symptoms which characterize this disease manifest themselves. Were the symptoms the mere result of the local irritation of a nerve, we might expect to produce them at pleasure, by merely irritating the nerve; but it is well known that this is not the case. In every instance it is necessary that a certain time shall elapse between the local injury and the appearance of the disease, which time is probably required, in order that the pathological condition above alluded to may be produced. It would thus appear that we have no pathological facts which lead to the conclusion, that poisons act by an impression made on the nerves of the part to which they are directly applied.

The principal physiological facts which have been supposed to support the opinion, that poisons may produce their effects on the system, without being generally applied to those tissues, the function of which they appear to destroy, are derived from the instantaneous manner in which some poisons have been stated to act. The support derived from this fact, however, has been founded on erroneous views which have been taken, of the time required for the blood to circulate from one part of the system to another; and also from the statements of the instantaneous action of the more powerful poisons, being deduced from incorrect observations. The following facts will, I trust, substantiate the correctness of these remarks, by showing that a sufficient time always elapses between the application of a poison and the appearance of its first effects, to allow it to enter the circulation, and to be directly applied to the tissue, the functions of which are affected.

II. In order fairly to enter on the investigation of the question which is the more immediate object of these researches, it is necessary that correct ideas should be entertained of the time required for the blood to circulate from one part of the system to another. I shall therefore commence by relating some experiments which tend to elucidate this important point, more particularly as the conclusions to which they lead are not in accordance with the opinions generally entertained on the subject.

As the introduction of a poison into the circulation is the first phenomenon that follows its application to a part, the following experiment, by affording a proof of the permeability of the tissues, shows how readily this may take place : it also offers a striking example of the rapidity with which the blood circulates.

(Exp. 1.) A drachm of the strongest *Liquor Ammoniæ*, mixed with five drachms of water, was injected into the jugular vein of a dog. A glass rod which had been dipped in hydrochloric acid was held immediately under the nostrils, in order to detect any ammonia that might escape from the lungs. Four seconds after the introduction of the first drop of the solution of ammonia into the veins, it was plainly detected in the air expired from the lungs by the white vapours that were formed on its coming into contact with the vapour of the hydrochloric acid. It would thus appear that in four seconds, this substance must have passed from the jugular vein through the right side of the heart, and reached the capillaries in the lungs; have permeated the parietes of these vessels, and escaped through the whole length of the air tubes.* Analogous experiments have been recorded by Magendie, and other physiologists, in which oil holding phosphorus in solution was injected into the veins, phosphoric acid being detected in the breath a few seconds after its injection.†

Having shown the facility with which the tissues are permeated, I shall now endeavour to elucidate the question as to the rapidity of the circulation, by tracing various substances, from one part of the vascular system to another. My experiments on this point have been much facilitated by the manner in which certain substances have been found to act on different parts of the vascular system.‡ The effects of these substances have been detected the instant they take place, by the use of the hemadynamometer, an instrument which indicates, by means of a column of mercury, the pressure sustained by the parietes of the blood-vessels, and which immediately becomes modified on any change being produced, either in the action of the heart, or in the capillary circulation.

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* As the principal interest attached to these experiments depended on the accuracy with which the time of the occurrence of the phenomena was observed, I would remark, that every precaution was taken in order to obtain correct data on this point. I would also state that Dr Sharpey, Professor of Physiology in the London University, sanctioned by his presence the most important of these experiments; and I with pleasure avail myself of this opportunity to return him my thanks for the valuable assistance and advice he has on all occasions so kindly afforded me.

† These observations are confirmed by experiments performed on delicate membranes when removed from the body. The rapidity with which these are permeated by different solutions, affords a decisive proof of the facility with which this process may go on, particularly when we consider that the most delicate membranes that can be used for these experiments are probably many hundred times thicker than the parietes of the capillary vessels.

‡ The proofs of the local action of these substances has been derived from an extensive series of researches on the subject, which will shortly be brought before the

(Exp. 2.) The following experiment furnishes an example of the time required for a substance to pass from the jugular vein to the capillaries of the pulmonary artery. It had been ascertained that soda and its salts possess the property of arresting the capillary circulation in the lungs. When this effect is produced, no more blood is sent into the left side of the heart and arterial system, and it follows, that the pressure sustained by the parietes of the arteries must be instantly diminished. Fifteen grains of soda dissolved in six drachms of water were injected into the jugular vein of a dog. Six seconds after the first portion of the injection was introduced, the pressure in the arterial system began to diminish, and the mercury in the hemadynamometer speedily sank to zero, although the pulsations of the heart still continued.*

(Exp. 3.) An experiment the reverse of the former was performed by connecting the hemadynamometer with the venous system. When the passage of the blood through the lungs is arrested, it is evident that the venous system must become congested, and thus the pressure supported by the parietes of these vessels will be increased. In this instance six seconds elapsed between the introduction of the substance into the veins, and any perceptible increase in the pressure.

It would appear from these experiments that soda when introduced into the jugular vein affects the capillaries in the lungs in from four to six seconds; a space of time rather greater than that required by ammonia to traverse this distance. This might arise from two causes; either that the diffusive power of some substances is much greater than that of others, and that they thus may be transmitted from one part of the column of blood to another, independently of its progressive motion; or that in some animals the circulation is going on much more rapidly than in others. The

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public.—Since the above was written, the experiments in question have been published in a memoir read at the Institute of France.

* The time at which marked effects are produced might not be the moment at which the substance is applied to the tissue affected; a slight interval probably elapses between the arrest of the capillary circulation in the lungs and the diminished pressure in the arterial system. The time, therefore, in which these effects were observed is probably a second or two later than that on which the soda reached the capillaries. The importance of taking into consideration even these apparently trifling circumstances will be acknowledged, when it is shown that an interval of two or three seconds forms a considerable fraction of the whole of the time required for the circulation to be completed in.

next points between which I shall endeavour to trace the passage of a substance are the jugular vein and carotid artery.

(Exp. 4.) The following experiment, although it does not afford a direct proof of the time occupied by a substance in passing from one of these vessels to the other, yet shows that it cannot, in this instance, have exceeded seven seconds. A tube, furnished with a stop-cock, was inserted into the carotid artery of a dog, the point of the tube looking towards the heart. A solution, containing seventy-five grains of chloride of barium in six drachms of water, was introduced into the jugular. Blood was allowed to escape from the carotid artery three seconds after the introduction of the salt into the vein, and was received into a vessel (No. 1) for four seconds. Another vessel (No. 2) was then substituted, but as the action of the heart was already arrested, a small quantity of blood only escaped from the arteries into it; the blood from the left side of the heart was afterwards added to it. The blood from the right cavities of the heart was collected in another vessel, (No. 3.) The quantities of blood contained in these different specimens were as follows: No. 1. contained four fluid drachms; No. 2. twelve drachms; and No. 3. twenty drachms. Each specimen was evaporated, carefully incinerated in platinum vessels, treated with hydrochloric acid, filtered, precipitated with sulphate of soda; the precipitate was collected, washed with diluted nitric acid, dried and weighed.

The following are the results: The quantity of sulphate of baryta furnished by No. 1 weighed 3.33 grains; that from No. 2, weighed 4.62 grains; and from No. 3, 0.90 grain. If from these data we calculate the quantity contained in equal quantities of blood in the different specimens, it appears that No. 1 contained 3.33 grains in four fluid drachms; No. 2 contained 1.54 grains in an equal quantity; and No 3 but 0.18 grain in the four drachms. This proves that the blood which contained the greatest proportion of the salt had already passed through the arch of the aorta before the action of the heart was arrested, or in less than seven seconds after the introduction of the salt into the jugular vein. If we consider that when the first vessel was removed, a considerable quantity of the salt had already entered it, we must conclude that the moment of its first escape from the carotid could not have been later than five seconds after its introduction into the jugular vein. The very slight trace of the salt found in the blood from the right cavities shows how completely the blood had been renewed.

The following observations will show the time required for a substance to pass from the jugular vein to the termination of the coronary arteries. This may be ascertained by availing ourselves of a property which some substances possess of suddenly paralyzing the heart when mixed with the blood circulating over its parietes.

Examples of such substances are found in infusion of tobacco, oil of tobacco, the *Upas antiar*, arsenic, oxalic acid, nitrate of potass, and hydrocyanate of potass, all of which, whether they act on other textures or not, have the property of speedily destroying the irritability of the heart, and thereby rendering it unable to contract in its contents.

(Exp. 5.) On injecting a solution of these substances into the veins, an interval varying from seven to fourteen seconds has been found to elapse between their introduction and the arrest of the heart's action. The cessation of the action of the heart has generally been ascertained by the use of the hemadynamometer, but in one experiment, in which the thorax was opened, artificial respiration being performed, the motion of the heart was seen to be suddenly stopped, seven seconds after the introduction of the first portion of a solution of nitrate of potash (one of those substances which exert this affect on the heart) into the jugular vein.

I shall now relate an example illustrating the space of time required for a substance to pass from the commencement of the aorta and to be generally diffused into the systemic capillaries. The manner in which this can be observed, is by injecting a substance, which had been ascertained to arrest the capillary circulation, into the axillary artery of the right side, the point of the syringe looking towards the heart: when pushed with force, the injection is thrown back into the aorta, and thus becomes distributed over the body. The hemadynamometer furnishes an index of the moment in which the capillary circulation becomes affected, for the pressure in the arteries becomes instantly increased. When a substance capable of exerting such an action on the capillaries is injected, it is found that these vessels become affected in an interval varying from four to seven seconds after its first introduction. It has already been shown in Exp. 3, that the interval which elapses between the introduction of a substance into the jugular vein, and its appearance in the carotid artery, may not be more than five seconds. From this point four seconds may be required before it is distributed to the systemic capillaries; thus giving an interval of nine seconds, which may intervene between the introduction of a substance into the jugular vein, and its general diffusion throughout the body.

(Exp. 6.) I shall conclude the observations I have to bring forward on this part of the subject, by relating one experiment which shows the time required for a substance to pass from the aorta through the whole of the vascular system, back into that vessel, and thence through the coronary arteries over the parietes of the heart. A substance capable of paralyzing the action of the heart was injected into the axillary artery, so as to pass into the aorta. Under these circumstances, a space of time, varying from thirty-five to forty-five seconds, has been found to elapse between the introduction of the substance and the cessation of heart's action. I would remark, however, that all those substances which act in this manner on the heart also possess the property of impeding the passage of the blood through the capillaries for a time varying from fifteen to twenty-five seconds, so that these experiments furnish no exact indication of the time in which a substance which does not possess this property may pass between the points above alluded to. From those experiments in which the phenomena would be observed with the greatest accuracy, I conclude, that the time required for a substance which does not act on the capillary tissue, to pass from any part of the vascular system back to the same point again, varies in dogs from twelve seconds to twenty seconds. These conclusions are in perfect accordance with those arrived at by Hering from a series of carefully conducted experiments on horses, in which he found that the whole round of the circulation was completed in about twenty-five seconds.

Having now the requisite date by which to determine the time in which a substance can be circulated over the body, I shall proceed to relate some experiments which have been performed with a view of discovering if a sufficient interval elapses between the application of those poisons which have been shown to act on the nervous system, and the first symptom of their effects, to allow them to be brought into contact with the nervous tissue throughout the body. Experiments have been tried with concentrated hydrocyanic acid, woorara, nicotine, conia, and strychnia,—poisons which have been shown to produce the most rapid effects on the animal economy.

(Exp. 7.) Half a drachm of concentrated hydrocyanic acid was prepared by passing sulphuretted hydrogen over the bicyanide of mercury. The gas being previously dried by passing it over chloride of calcium, the acid was collected in a receiver surrounded by a freezing mixture. It was used immediately after its preparation. In order to insure a marked effect being produced, the whole of the acid was poured, on the tongue of a strong dog, weighing about eighteen pounds, the head being kept elevated. Eleven seconds elapsed between the application of the poison and the appearance of any morbid symptom. The respiration then became affected. The animal was dead thirty-three seconds after the administration of the poison. If a tube be introduced into the trachea, through which the animal can breathe, a longer interval elapses between the application of the poison and the appearance of its effects. This is probably owing to the acid not being inhaled with the breath; for on account of the extreme volatility of the strong acid, it is converted into vapour the instant it comes into contact with so warm a surface as the mouth, and in this state it is applied to the capillaries in the lungs, and rapidly absorbed. It thus has a shorter distance to pass through before reaching the nervous centres than when it enters the capillaries of the mouth, and circulates through the right side of the heart.

(Exp. 8.) A tube being introduced into the trachea of a dog, a drachm of the strong acid was poured on the tongue of the animal. Sixteen seconds elapsed before any symptom of the action of the poison manifested itself, and the animal died about forty-five seconds after the application of the poison. These experiments have been repeated twice, and always with the same results. They show that, in these instances at least, a sufficient interval has always elapsed between the application of the acid, and the moment when its first effects were produced, to allow of its being brought into contact with those tissues on which it appears to act.

(Exp. 9.) The woorara is a poison which has been stated to produce instantaneous effects when introduced into the circulation. As it is not very rapidly absorbed, the readiest way of testing its action was by injecting it into the veins. Five grains of the poison dissolved in five drachms of water were injected into the jugular vein of a dog. Twenty seconds elapsed before any symptom of the action of the poison could be observed. Violent convulsions were then produced, and the animal was dead about forty-five seconds after the introduction of the poison. This experiment has been repeated three times, and has constantly furnished analogous results; the time required for the poison to produce its first effects varying from sixteen to twenty-three seconds. *

(*Exp.* 10.)—The active principle of the hemlock, or conia, is a poison which has been stated by Dr Christison to produce effects so rapid, that an appreciable interval did not elapse between the introduction of the poison and the death of the animal.—(See Transactions of the Royal Society of Edinburgh.)

Having obtained a considerable quantity of conia from an alcoholic extract of the seeds of *Conium maculatum*, and which exactly resembled in physical and chemical characters that described by Dr Christison, I proceeded to try the following experiment, using a large dose of the poison, in order to insure a marked effect the moment it should begin to act.

Ten drops of conia, neutralized with a small portion of diluted hydrochloric acid, were injected into the femoral vein of a dog by means of a finely pointed glass syringe.* Fifteen seconds elapsed between the introduction of the poison and the appearance of any symptoms of its action. The respiration was then violently affected, and the animal was dead thirty seconds after the injection of the poison;—thus affording a proof of its virulence; for by no other substance that I have used has death been produced in so short a time. This experiment has been repeated four times, and in no instance have any symptoms manifested themselves in less than fifteen seconds.

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* The poison was procured for me by my respected Professor, Dr A. T. Thompson, whom I have to thank for the valuable assistance he has afforded me whilst conducting these experiments.

(*Exp.* 11.) The next substance whose action I have tried is nicotina, or the active principal of tobacco. Two drops were injected into the jugular vein of a dog. The first symptoms of its action manifested appeared fifteen seconds after the injection. The animal was dead in about one minute and a half after the administration of the poison.

When this substance was applied to the tongue, an interval of twenty seconds elapsed before any marked symptoms manifested themselves.

(*Exp.* 12.) The striking effects produced by nux vomica are such as enable it, the moment on which these are first produced, to be carefully appreciated. A solution containing twelve grains of the alcoholic extract was introduced into the jugular vein of a dog. Convulsive movements were observed twelve seconds after the introduction of the first portion of the injection. The animal died in about a minute and a half.

These experiments, I think, furnish sufficient proof that the opinion of the instantaneous action of poisons must be founded on incorrect observations. An interval, never less than twelve seconds, has been shown to elapse between the application of a poison and the first symptom of its action; an interval in itself so short as might almost justify its being neglected, particularly in the present state of opinion of physiologists on the rapidity with which the organic processes are carried on; but which becomes of importance when compared with the time actually occupied for the performance of these processes, as it is quite sufficient for a poison to be brought into general contact with those tissues it affects. This being the case, it is unphilosophical to suppose that these effects on the nervous centres are owing to an impression communicated to them by the nerves, and not the result of the direct application of the poison to them.

The following experiment supports these conclusions, by showing that the nearer to the nervous centres is the part of the vascular system into which the poison is introduced, the more rapid is its action.

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* In order to prevent the contact of the poison with the blood until the moment when the injection was pushed, a small portion of oil was drawn into the point of the syringe, which could thus be introduced into the vein in readiness to push the injection on a signal being given, without any danger of the poison becoming mixed with blood.

By injecting a poison which acts on the nervous system into the aorta, the distance it has to traverse before reaching the nervous centres is much less than when it is introduced into the venous system. We should thus have an appreciable difference in the interval elapsing between its introduction and the appearance of the first symptom of its effects, whether it be introduced into the artery or the vein.

(*Exp.* 13.) A tube was introduced into the axillary artery of a dog. Five grains of woorara, dissolved in two drachms of water, were injected, so that it should pass into the aorta. The first symptoms of the action of the poison manifested themselves seven seconds after the injection, and the animal was dead in thirty seconds after the introduction of the poison.

On comparing this experiment with Experiment 7, wc find a difference of some seconds elapsing in the first appearance of the action of the same poison, according as it is introduced into the nervous or arterial system. Analogous experiments have been performed with other substances, and constantly with the same results.

As the evidence derived from these experiments in support of the theory of general diffusion being necessary for the action of a poison is only presumptive, the present state of our knowledge not allowing us to detect their presence in the nervous tissue, I have endeavoured to strengthen it, by showing that the mere contact of a poison with a large extent of surface is not sufficient to produce any general effects, as long as it is prevented entering the general circulation. The only parts available for these researches are the abdominal viscera, on account of the facility with which they can be insulated from the general circulation, their connection with the nervous system remaining unimpaired.*

(*Exp.* 14.) The abdomen of a dog was laid open. A ligature was passed under the vessels entering the liver, and tied. Three drachms of hydrocyanic acid of Scheele's strength, containing 3.3 per cent. of acid, were introduced into the stomach through an opening made in its parietes. The poison was thus brought into contact with a large surface, freely supplied with nerves, at least with those nerves on which poisons are supposed more particularly to produce these impressions. (See Addison and Morgan on Poisons, page 35.) Under these circumstances, the poison remained in the stomach ten minutes, without producing the slightest general effect. The ligature on the *vena portæ* was then removed, so as to restore the circulation over the viscera. One minute after the removal of the ligature, the animal began to experience the effects of the poison. The ligature was again replaced; but before this could be effected, a sufficient quantity of the poison had been absorbed to arrest the respiratory movements, and the animal must have speedily perished, had not artificial respiration been had recourse to. After this had been continued eight minutes, the animal was sufficiently recovered to continue the respiratory movements itself. After a short interval the ligature from the *vena portæ* was again removed. The animal was dead in two minutes.

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* I am aware that analogous experiments have been performed by Magendie, Segalas, and other physiologists, but as those I have to bring forward differ from theirs, and afford a more complete proof of the fact I wish to establish, I have thought it advisable to relate them.

This experiment affords a strong proof of the non-action of poisons when merely applied to the extremities of nerves, for not only did the poison produce no effects before it entered the circulation, but we find the animal recovering from the effects of the poison, with three drachms of hydrocyanic acid still in its stomach.*

(*Exp.* 15.) As it might be objected to this last experiment that the nerves to which the poison was applied were not in their natural condition, on account of the circulation not going on over them; and that they were thus rendered incapable of transmitting any impression that might be made on them, the following modification of the experiment was devised.

The abdominal aorta of a dog was exposed, and a ligature passed around it, immediately above the origin of the cœliac axis and mesenteric arteries. A tube was then introduced into the aorta, directly below the origin of these vessls, so that any injection introduced through the tube must pass into them. A ligature was passed round the vessels entering the liver, and an opening was made in the *vena portæ*, so as to allow the blood to circulate over the viscera, when the ligature was removed from the aorta. Five grains of woorara, dissolved in four drachms of water, were now introduced through the tube, and passed into the cœliac axis and mesenteric arteries. The ligature from the aorta was then removed, and thus the blood containing the poison was circulated over the whole of the abdominal viscera, and applied to the extremities of the nerves, in circumstances favourable for the transmission of any impression that might be made on them by this large dose of poison. Seven minutes, however, elapsed before the slightest symptom of the action of the poison manifested itself, and the animal did not die until fifteen minutes after the introduction of the poison; even then it is probable death was produced by the blood containing the poison having escaped from the *vena portæ* into the cavity of the abdomen, from whence a portion of the poison was again absorbed and carried into the general circulation.

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* The explanation that has been brought forward of the sudden action of some poisons by Muller and those physiologists, who consider that the circulation requires one or two minutes to be completed in, and yet who allow that poisons only act when applied to the nervous centres, is shown by this experiment to be incorrect. They state that the poison becomes applied to the brain and spinal chord by diffusion and imbibition through the tissues, independently of its being transmitted by the blood. Yet, in this instance, we have the poison they bring forward as possessing this power of expansion in the highest degree in contact with a large surface of the body without giving any proof of its having reached the nervous centres, independently of its transmission by the blood.—(See Muller's Physiology, translated by Baly, p. 247.)

Any remarks on these experiments would be perfectly superfluous, the striking nature of the facts clearly showing the point they were intended to illustrate. I would only observe that they are in perfect accordance with a number of facts brought forward by other physiologists.

III. It now only remains for me to notice some experiments that have been brought forward by Messrs Addison and Morgan, in their Essay on the operation of poisonous agents, (Lond. 1829,) and which, if free from fallacy, would prove that some poisons can produce general effects from an impression made on the nerves of the part to which they are directly applied. The most important experiment adduced by these gentlemen in support of the local action of a poison is that in which the jugular vein of a dog was exposed in a considerable part of its course. Two ligatures were applied to it, three inches apart; a portion of woorara was introduced into that part of the vessel, comprised between the ligatures, and the upper ligature was then removed. The blood was thus brought into contact with the poison which became applied to the parietes of the vein. In these circumstances, it is stated that the poison rapidly produced its effects; and it is concluded that these effects were owing to an impression made on the nerves of the insulated portion of the vein.

I would observe, however, that there must evidently be some fallacy in this experiment, for had the vein been perfectly insulated in the space comprised between the two ligatures, the only parts by which it still remained connected with the system were at those parts of the vessel beyond the ligatures, and thus, as far as nervous communication was concerned, it was in the same condition as if it had been removed entirely from the body, for a ligature still was around the lower part of the vessel, and one had previously been placed around the upper portion; an assertion quite sufficient to incapacitate the nerves which had been included in it, from performing their functions, and thus there remained no means by which an impression made on the nerves in the insulated portion of the vessel would be transmitted to the nervous centres. As this obvious source of fallacy must have struck the authors of the experiment did it really exist, I conclude that the vein could only have been partially separated from the surrounding tissues. In this case we have a ready explanation of the action of the poison, the free anastomoses which exist between the veins of opposite sides readily permitting the poison to become mixed with blood circulating through the body. Even supposing the complete insulation of the vein, the ready manner in which solutions become diffused through fluids, would forbid the conclusion that the solution of the poison in the blood could be confined to the insulated portion of the vessel. It must speedily become mixed with the blood in the upper part of the vessel, above the point at which it was insulated, and thus could readily enter the general circulation.

Another experiment brought forward by these gentlemen to prove that a poison does not exert its effects by being taken into the blood, and thus applied to the nervous centres, is one in which they connect the carotid arteries of two dogs in such a manner, that they suppose the blood from the heart of the one dog is sent to the brain of the other. This supposition, however, is entirely opposed to the physical arrangement of the vessels that supply the brain. Were the carotids the only vessels going to this organ the experiment would be a fair one; but in the dog the vertebral arteries are so large as readily to furnish a sufficient supply of blood to the brain, even when the carotids are tied. The only condition in which the blood could pass from one animal to the other is by the pressure of the blood on the parietes of the superior end of the carotid of each dog being less than the pressure on the inferior portion of the carotid of the dog with which it was connected, and the quantity of blood that passed would be in proportion to the difference of pressure on the two ends of the tube connecting the vessels. I have ascertained by direct experiment with the hemadynamometer, that the pressure exerted on the parietes of a tube, inserted into the distant extremity of the carotid, is less by a column of mercury of not more than two or three-tenths of an inch, than the pressure on a tube inserted into the end nearer the heart. If we suppose, therefore, that the pressure in the arterial system of each animal was originally equal, (a fact by no means probable,) it is evident that but a very small quantity of blood can pass from the arteries of one animal to those of the other, and this only whilst both are in the same state. As soon as the poison begins to exert its influence on either animal, the pressure in its arterial system will be diminished, and thus, far from blood containing the poison being sent to the brain of the sound animal, the only effect of this arrangement will be to cause a reflux of pure blood from the arteries of the sound dog into those of the poisoned one. It is not surprising that, under these circumstances, the experiment furnished a negative result. It is evident that from neither of these experiments can any argument be deduced in favour of the local action of poisons.

I shall now draw up a short abstract of the facts which these ex-

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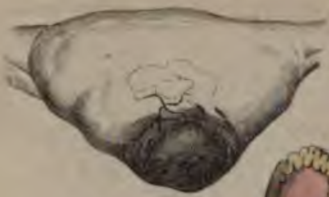

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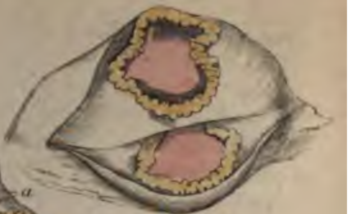

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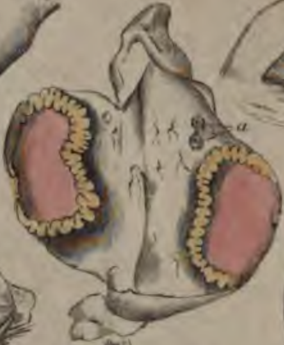

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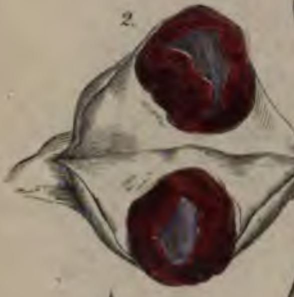

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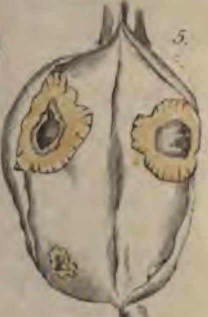

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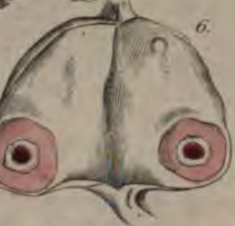

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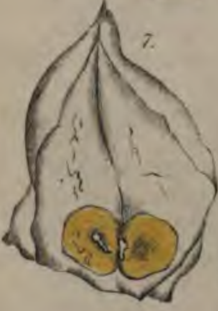

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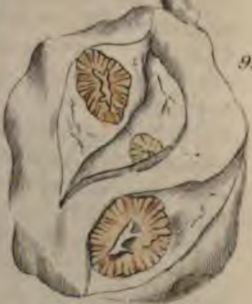

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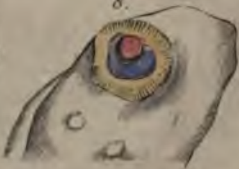

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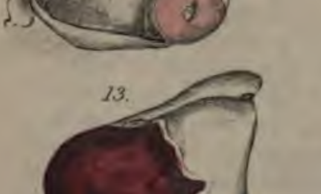

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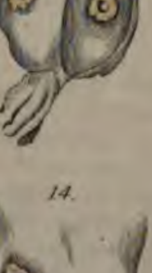

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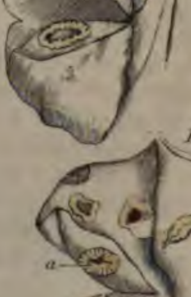

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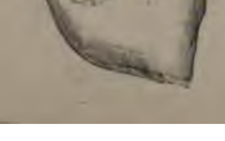

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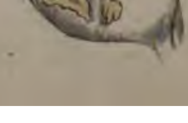

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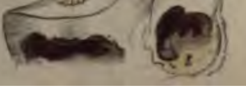

periments have been intended to illustrate, observing, that in using the word poisons, I would only now allude to those which appear to act on the nervous system.

1. That the time required* by a substance to permeate the capillary vessels may be considered as inappreciable.

2. That the interval elapsing between the absorption of a substance by the capillaries and its general diffusion through the body may not exceed nine seconds.

3. That an interval always more than nine seconds elapses between the introduction of a poison into the capillaries or veins and the appearance of its first effects.

4. That, if a poison be introduced into a part of the vascular system nearer the brain, its effects are produced more rapidly.

5. That the contact of a poison with a large surface of the body is not sufficient to give rise to general symptoms, as long as its general diffusion through the body is prevented.

ART. III.—*Observations on Corpora Lutea.* Part I. By ROBERT PATERSON, M. D. Physician to the Leith Dispensary.

ON examining into the appearances which the ovaries present at different periods of life, and more especially during that period when the functions of these bodies are in a state of activity, a variety of appearances present themselves, some evidently the result of disease, while others are the result of natural processes, connected with the function of menstruation or the evolution of the ovule.

In the last mentioned process, the evolution of the ovule, it is well known, that a yellow-coloured substance is formed in the place from which the ovule escaped. Many other bodies, however, which have also a yellow colour are formed in the ovaries; and hence have arisen the difficulties of medical men in distinguishing the bodies, which are the result of impregnation alone, and are consequently to be considered true *corpora lutea*, from those objects which are so frequently to be found in the bodies of children and of virgins, and which have therefore been denominated false or virgin *corpora lutea*.

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* In regard to the statement as to the time required for substances to be diffused through the body I would observe that all my experiments have been performed on full grown dogs. It is probable that these observations might require to be slightly modified in applying them to other animals. It is also evident that a difference must exist in the time occupied by a substance in reaching the capillaries in different parts of the body. The time here given, or nine seconds, is that in which I conclude a substance may be applied over the greater part of the body, more particularly to the central parts of the nervous system. It would appear that seven seconds may suffice for its being conveyed to the capillary terminations of the coronary arteries.

It is my intention in the following communication to consider, *first*, The appearances presented by the true *corpus luteum* in its early stages, anatomical position, and time and mode of disappearance; *secondly*, The different kinds of false *corpora lutea*.

The great practical question of the means of distinguishing these bodies will fall to be considered under the latter divison of my subject.

PART I.—TRUE CORPORA LUTEA; EXTERNAL APPEARANCE OF THE IMPREGNATED OVARY.

The ovarium in the unimpregnated condition and during the child-bearing period of life is a small white flattened oval body. It is composed internally of dense cellular tissue, containing numerous imbedded vesicles, and is covered externally by two tunics, the proper cellular tissue of the ovary and the peritoneum. Upon impregnation occurring, a greater quantity of blood than usual is sent to the ovary, which has been the seat of conception. Around the Graafian vesicle about to discharge the ovule, the vessels become numerous and gorged with blood, and in the vesicle itself is commenced a processs by which its contents are increased, and its walls thickened. This process, we shall afterwards have reason to believe, is of the nature of inflammation.

The result of this general turgescence of the ovary, the increased quantity of fluid in the Graafian vesicle, and the formation of a substance around it, is the gradual pressure of it against the external coverings of the ovary, through the coats of which, as well as those of the vesicle itself, a small aperture is formed for the purpose of permitting the escape of the ovule. Upon the occurrence of this event, an effusion of blood immediately takes place, which fills up the now more or less partially emptied cavity of the Graafian vesicle, and the aperture through which the ovule has escaped.

When the ovary, therefore, is examined shortly after the evolution of the ovule, it is observed externally to be much increased in size, and in one or other extremity an enlargement is generally to be seen, most commonly of the size of a hazel-nut, but sometimes larger.

At this early period the protuberance is always of a bluish red or dark purple colour, with numerous vessels, ramifying over its surface. These vessels are generally filled with florid blood, which contrasts beautifully with the dark colour of the subjacent parts.

On examining the surface of this dark portion, a minute cicatrix or depression is always to be observed, and even an aperture may be recognized.* All such appearances, however, although they are present in cases of impregnation, are found occasionally to exist when no such circumstance has happened. It is only, therefore, by the internal examination of this dark-coloured body, and by certain marks which are to be discovered upon a section being made of it, that we are enabled to pronounce it to be a true *corpus luteum.*

INTERNAL APPEARANCE OF CORPUS LUTEUM DURING THE FIRST THREE MONTHS.

Figs. 1 and 2 represent the external and internal appearance of a *corpus luteum*, a very short time after the rupture of the Graafian vesicle and escape of the ovule. It was removed from the body of a female, who died suddenly in consequence of injuries inflicted by her husband.† I am indebted to Dr J. Y. Simpson for this specimen. Upon making a section of this *corpus luteum*, blood exuded abundantly from the whole cut surface of the ovary. This blood having been gently removed, it presented very nearly the appearance seen in Fig 2. The cellular tissue of the immediately surrounding portion of the ovary was very much filled with blood, and the external margin of the *corpus luteum* was of an intensely dark colour, thicker, however, on one side than on the other. The internal membrane, which was of a bluish colour, and partially filled with blood, was irregular in its shape, and between it and the dark external margin formerly mentioned, the substance was of a brighter red colour, having dark striæ or folds running through it. After immersion in spirits, these striæ assumed a yellow colour, and the internal membrane could (with delicacy) be lifted up from the substance of the *corpus luteum.*‡

The uterus of this case was a little enlarged, and contained an extremely thin and soft decidual membrane.

An interesting specimen of a *corpus luteum*, a very little older than the above described one, occurred to Dr John Reid, lately in the Royal Infirmary. The patient, a young female about 18 or 19 years of age, came into the house labouring under peritonitis, of which she died on the third day after her admission. The left ovary presented a *corpus luteum* with its edge about two or three lines thick, beautifully plicated, and of an intensely yellow colour; the centre was filled with a coagulum of blood. I had not an opportunity of examining this specimen till after its immersion in spirits; the plicated margin was then quite distinct, but the central coagulum was gone. The uterus of this girl was also slightly enlarged, and contained a soft decidual membrane.

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* Sir Everard Home's case, related in Philosophical Transactions for 1817.

† A more particular account of this case will be given afterwards. See page 60.

‡ This preparation is still preserved in Dr Simpson's Museum, and the above-mentioned points are distinctly visible.

The next case which falls to be noticed is one of very great interest, as it exhibits the structure of the early *corpus luteum* in a state of great perfection. The poor woman from whose body it was taken, walked into the waiting-room of the Royal Infirmary, apparently in good health, for the purpose of receiving advice. She had not been long seated when she suddenly groaned, and dropped her head upon her knee. Upon being looked to she was found to be quite insensible, and she died in the course of a very short time. It appeared from the account which was procured from her friends, that she had separated from her husband about two years before, and that since then she had lived a very intemperate and irregular life.

Upon examination of the body, extensive ramollissement of the brain was discovered. The internal surface of the uterus exhibited a coating of soft but thick decidual membrane, which reached to within an inch of the *os uteri*, and the aperture of the Fallopian tube was quite pervious. No ovum could be detected in the uterus upon minute microscopic examination. The ovary externally was much increased in size, and presented the usual appearance of tortuous vessels and a small cicatrix. Its section, which is exhibited in Fig. 3, presented to us a reddish gray-coloured central coagulum, with a yellow plicated margin. The quantity of diffused melanotic matter in the substance of the ovary immediately external to the yellow margin considerably heightens its effect. We think it most probable, from the consideration of the case, and on comparison with others, that impregnation had occurred from a fortnight to three weeks before death.

Fig. 4 represents a section of the ovary of a female who died with symptoms of chorea in the Edinburgh Infirmary, and for which and the immediately preceding specimen, I am indebted to Dr John Reid. Dr Allen Thomson, in describing the ovum which was found in this case, says, "that it was procured from the uterus of a woman aged twenty, who died after an illness of a fortnight's duration. This person was married six weeks before her death to a man with whom she had cohabited for a year before their marriage, and by whom she had had one child. The last menstruation ceased on the 24th of May 1838. Her husband, a labourer, visited her at the end of every week, and her death took place on the 1st of July, that is five weeks and one day after the first visit of her husband, succeeding to her last menstruation." The uterus was nearly one-half larger than in the unimpregnated condition. "The left ovary presented the most perfect specimen of a *corpus luteum* in process of formation which I have ever seen in the human female." Dr Thomson, from whose paper the above quotation is taken, goes on to state that a cavity existed in its interior. This, however, is erroneous, as its centre was filled up with a reddish gray-coloured fibrinous mass, very similar in appearance to the immediately preceding one. The yellow plicated structure which surrounded this fibrinous mass was extremely regular in its foldings, and of a bright yellow colour. (For a further account of the appearances in the uterus, and the minute anatomy of the ovum and envelopes, I refer the reader to Dr Thomson's paper in the Edin. Med. and Surg. Journal, No. 140, for 1839.) It appears most probable that this was a pregnancy of about five weeks' duration.

The next specimen which has been represented, (Fig. 5,) exhibits the appearance of the *corpus luteum* at the second month of pregnancy. The patient died of *delirium tremens* in Dr Craigie's ward of the Royal Infirmary. On Sunday she miscarried, and died on the Thursday following, making an interval of three days and a half from the time of her miscarriage to that of her death. No account could be procured from this woman of her state; but the fœtus had the size and appearance of a two months' old embryo. The *corpus luteum* was contained in the left ovary; it was of smaller size than those formerly mentioned, and had not the plicated structure distinctly marked. This was still, however, to be noticed on narrowly inspecting it. Lining a cavity in the interior of this yellow body was a strong grayish-coloured membrane, the internal surface of which had a soft, minutely lobulated and lymphy appearance, and a small quantity of clear fluid was contained in it. External to the yellow body was also a firm membrane, and the substance of the ovary was very much injected around it. (See Fig. 5.)

Dr Montgomery* of Dublin has figured and described some beautiful instances in which the most usual appearance of the *corpus luteum* at the third month are exhibited; but about this time or a little later, certain changes are more actively commenced for the purpose of diminishing the size of the ovary, by contracting the *corpus luteum*. It will be observed from the cases which have just been related, that Dr Montgomery has fallen into an error, in imagining that the central cavity always exists till about the third month of pregnancy; his words are, "We shall, I believe, always find the cavity still existing within the first three or four months after conception." That this is no test whatever of an early state of the *corpus luteum*, and consequently of pregnancy, will at once be apparent from simple inspection of Figures 3 and 4, where a cavity evidently has never existed, and where the cavity of the Graafian vesicle has been from the moment of its rupture filled with coagulated blood, which has subsequently become lymphy and organized.

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* Montgomery on the Signs of Pregnancy, p. 226.

DISTINGUISHING MARKS OF THE EARLY CORPUS LUTEUM.

What, then, are the marks by which we recognize a *corpus luteum* before the third month? These we shall find to consist of the peculiar plicated structure of its proper substance, and the presence of a central cavity or fibrinous coagulum.

I shall here shortly review the anatomy of the Graafian vesicle, and the changes which it undergoes in consequence of fruitful intercourse, so that we may the more readily understand the manner in which this peculiar plicated structure is produced. The ovary, as has already been stated, contains imbedded in its proper substance from twelve to twenty various sized vesicles, which are well known to have been denominated after the celebrated De Graaf, who first described them accurately. Each Graafian vesicle is composed of two coats or layers, an external one, dense and strong, and an internal one, delicate and soft. In the interior is placed the proper fluid of the Graafian vesicle, and floating in it the ovule of Baer, with its abundant proligerous disk. Upon the occurrence of conception, a larger quantity of blood than usual is sent to the ovary; the vessels, more especially surrounding the vesicle, which has been the seat of conception, carry a greater quantity of blood, and transmit it to the coats of the vesicle. A degree of active hyperemia is consequently now induced, by which the quantity of fluid in the Graafian vesicle is considerably increased, at the same time that an effusion, partly of blood globules, and partly of lymph, takes place between the membranes of the vesicle. The result of this combined process is, that the whole of the vesicle is very much increased in size, from substances effused into its interior, and which, consequently, puts its membranes greatly upon the stretch.

Immediately upon the rupture of the vesicle, and the escape of the ovule, along with a quantity of the fluid, a sudden diminution in the size of the Graafian vesicle takes place, and the formerly stretched walls of the vesicle regain, by their elasticity alone, somewhat of their former size. But the effusion which has taken place between these membranes in their distended condition necessarily becomes puckered up when the rupture takes place, and assumes the folded appearance which is well seen in Figs. 3 and 4. The internal membrane of the Graafian vesicle is sometimes also puckered up, and folds of it become insinuated into the plicæ of the substance of the *corpus luteum.* Upon the rupture of the Graafian vesicle taking place, a certain effusion of blood always occurs from the ruptured portion. This in some cases is greater than in others, and the quantity of it, which enters the cavity of Graafian vesicle, depends upon the greater or less emptiness of that cavity. If a large quantity of fluid escape, more of the blood enters the cavity, and, becoming shortly organized, constitutes the fibrinous-looking mass which is to be seen in Figs. 3 and 4. But if a very small quantity of the fluid escapes, very little blood, of course, can enter, and it is in such cases that we have a central cavity existing from the first. It will be evident to those acquainted with this subject, that we consider the substance of the *corpus luteum* to be effused between the two coats of a Graafian vesicle. A similar opinion is held by Dr Montgomery.

OPINIONS OF BAER AND LEE REGARDING THE SITUATION OF THE CORPUS LUTEUM.

It is proper here to mention, that two different views are held by celebrated members of the profession regarding the situation of this body.

Professor Baer of Konigsberg believes, that the *corpus luteum* is nothing more than the internal membrane of the Graafian vesicle in a state of hypertrophy. This opinion, from the celebrity of its author, has been extensively adopted by the profession. The other view which has been lately advanced by Dr Lee of London, is, that the substance of the *corpus luteum* is deposited external to both layers of the Graafian vesicle, and, consequently, between it and the proper substance of the ovary. This opinion, Dr Lee has been led to advance, from having noticed in one or two early cases, that he could divide the thick internal lining of the *corpus luteum* into two layers, while the external covering of it appeared to be simply the condensed cellular tissue of the ovary. Before the appearance of Dr Lee's paper,* I had many opportunities of observing that the proper substance of the *corpus luteum* was covered by two membranes; *first*, by its cellular envelope, a continuation of the proper cellular tissue of the ovary, and, *secondly*, by an immediately investing thick, and distinct membrane. Since then, however, I have paid additional attention to this subject, and have had much pleasure in demonstrating both these layers to Dr Simpson, and a number of professional friends, as well as to the members of the Anatomical Society of this town. Any one may satisfy himself of this by a very simple experiment. Let him procure the ovary of a cow containing the *corpus luteum.* In this animal the parts are so large as to be easily distinguished. An incision is to be carefully made through the peritoneum and proper tunic of the ovary, and then turning their edges aside, no difficulty will be experienced in turning out the *corpus luteum* from the ovary. On examining it we find, that it is still covered with its cellular envelope. Upon cutting gently through this, and reflecting it, we find that the orange-coloured *corpus luteum* is still covered by a proper tunic, and when this is cut through and elevated with the forceps, the naked *corpus luteum* comes immediately into view. Now what else can this second tunic be but the external membrane of the Graafian vesicle. This arrangement may be demonstrated not in the cow alone; for it is easily to be seen in the sheep and pig as well as the human subject. We cannot understand how Dr Lee has fallen into this error, unless it be from the circumstance of not having examined the state of parts in the lower animals, where, as in the cow, they are exceedingly manifest.

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* Medico-Chirurgical Transactions for 1839.

Again, for the next point, which is not one of such easy demonstration, I am proud to adduce the testimony of my friend, Dr A. Thomson, who was a believer in the doctrine of Baer regarding the internal membrane of the Graafian vesicle, until he saw it otherwise demonstrated. In a series of experiments which he was following out on bitches, he was kind enough to permit me to assist. In this animal we had many excellent opportunities of watching the formation of the *corpus luteum* on almost every day from the thirty-sixth hour till the twenty-first day after impregnation. It was truly interesting to notice the gradually increasing development of the substance of the *corpus luteum* between the membranes of the Graafian vesicle during this interval. The internal membrane continues distinct during all this time; but as it reaches the sixth or eighth day it becomes much thicker and whiter in appearance. Upon examining minutely into the cause of this, it is found to arise from the presence of an effusion of soft lymph upon its internal surface. The use of the lymph is evidently for the purpose of effecting the closure of the central cavity. If the *corpus luteum* is examined at such an advanced stage as when the lymph has become pretty firm around the membrane, and where evidently a cavity would have continued to exist, this lymph can be separated with care into several layers. Dr Lee found that it separated most easily into two layers; while Professor Baer imagined that it was all lymph together. Dr Lee's internal membrane then is evidently nothing else than a layer of coagulable lymph. Professor Baer, on the contrary, had failed to distinguish the proper internal membrane from the effusion of lymph on its surface.

In the experiments on the bitches before-mentioned, we had opportunities of witnessing the progressive effusion of this lymph, but could, in general, distinctly tell the internal membrane from it.

Upon viewing this internal membrane with the microscope, it is found to have lost the granular structure which it has previous to impregnation.

APPEARANCE OF THE CORPUS LUTEUM FROM THE THIRD MONTH UP TO THE FULL TERM OF PREGNANCY.

It may be remarked as a general rule regarding the *corpus* *luteum*, that it is larger in the early months, and proportionally diminishes in size as we approach the full term of pregnancy. Its colour is now most generally of a dingy-yellow ; occasionally the yellow is very bright, (see Fig. 7), and not unfrequently it has a reddish hue. Dr Montgomery believed that this reddish hue of the *corpus luteum* is always communicated to it in consequence of inflammation existing in the uterus and ovaries at the time of death. This change of the usual colour cannot always be traced to such a cause. We have frequently observed it when no inflammation of these parts existed at the time of death, and a similar variation of colour, is occasionally seen in the lower animals. Thus we have seen the *corpus luteum* of the cow, of a pinkish yellow colour, and that of the ewe of a yellow colour throughout, their ordinary respective colours being orange and pink. We believe it is as liable to change of colour as lymph effused on any other membrane has. Figs. 6 and 10 may be consulted for the sake of comparison. Fig. 6 is the natural appearance of the *corpus luteum.* The patient died from the effects of ruptured uterus, two hours after delivery. No evidence of inflammatory action having existed in these parts was obtained upon dissection. For this case, I am indebted to Dr Craigie of Leith, who was called in by the midwife who had charge of the case. Fig. 10, on the contrary, was taken from the body of a female who died of inflammation of uterus from retained placenta one month after mature delivery. For this preparation I am also indebted to Dr Craigie.

The central cavity, too, if one existed in the early months, begins to contract, and is then generally to be found (more especially towards the later months) in the form of a central irregular white and puckered line. This, however, is not always the case. We have already remarked that, from the very first, occasionally, no central cavity exists, but when it does exist, and its internal coating of lymph is thick, it not unfrequently retains its cavity entire throughout the whole course of pregnancy. This is well seen in Figs. 6 and 8, taken from individuals who died after mature delivery.

We conceive that one of the most distinguishing marks of this body during the period that we are at present considering, is to be found in its regular shape. This is never to be seen in the bodies which have been denominated false *corpora lutea*, which will be considered immediately. We have seen the *corpus luteum* once or twice with an appendage in the shape of an additional lobule ; but that also, as well as the *corpus luteum* itself, was rounded and not in the least irregular in its outline. In its centre it may either have a fibrinous mass, a central cavity, or a white puckered line. " Of this latter appearance," says Dr Montgomery, " it ought to be observed, that it is visible as long as any distinct trace of the *corpus luteum* remains, and forms one of the most essential characters, distinguishing this body from every other that might be confounded with it."

It is of importance to remember that the *corpus luteum* is extremely soft in those dying from puerperal fever and similar diseases, so much so, indeed, as occasionally, when making a section of them, the edge of the knife removes the central cicatrix. This is exhibited as it happened in Fig. 7. The patient died of puerperal fever, and the knife with which the section was made happening to be rather blunt, the central cicatrix was torn from its attachment to the substance of the *corpus luteum.*

MODE AND PERIOD OF DISAPPEARANCE OF THE CORPUS LUTEUM.

The use to which the *corpus luteum* is put during pregnancy is wholly unknown. It appears most probable that the object of its formation is to assist in the evolution of the ovule, and to close up the aperture from which it has escaped. After this it acts merely the part of an extraneous body in the ovary, and its absorption would be accomplished much more speedily were it not for its organization.

The large quantity of blood sent to these parts during pregnancy prevents absorption going readily on, and it is to this that we attribute its long residence in the ovary. We think this is distinctly shown by the fact of its speedy disappearance after delivery when the absorbents are active; but if any cause, such as inflammation, keeps up a larger supply of blood in the parts for a length of time after delivery, the removal of this body is completely stopped, and it remains of larger size. Fig. 10 illustrates this very well. It was taken from the body of a female who died one month after delivery at the full term.

Inflammation in the uterus of this case had been constantly going on in consequence of a partially retained placenta, and we see the large size of the *corpus luteum* at such a length of time after delivery. In the usual course of things, then, after a natural labour at the full term, or even after an abortion, the activity of the absorbents is so great, that little confidence can be placed upon the appearance of this body in many cases, in the course of six weeks after that event, as an indication that the individual has been pregnant. "The exact period of the total disappearance of the *corpus luteum*," says Dr Montgomery, "I am unable to state, but I have found it distinctly visible at the end of five months after delivery at the full term, but not beyond this time." We have not been so fortunate as Dr Montgomery in discovering the remains of the *corpus luteum* at this period after delivery, although we have examined many ovaries about five months, and are therefore inclined to look upon it as a rare occurrence. We have also examined many ovaries at three and four months after mature delivery, without finding any thing like positive evidence of a true *corpus luteum* having existed in them. Passing, then, from the time of its disappearance, of which we evidently know very little, it being modified by so many different circumstances, we proceed to consider the manner in which it disappears from the ovary.

We have already stated, that the formation of the *corpus luteum* consists in the deposition of a lymphy deposit between the layers of the Graafian vesicle. It is natural, therefore, to expect, that in the reabsorption of this deposit, will consist the method in which this body disappears. The manner of its obliteration then will greatly depend upon the presence of a central cavity or a cicatrix. So long as the cicatrix remains in a distinct form in the ovary, so long may every confidence be placed upon it as evidence that a true *corpus luteum* has existed there. But in many cases where abortion occurs at an early period, and in others where delivery takes place at the full time, a central cavity exists. When the substance of the *corpus luteum* is absorbed, the two membranes of the Graafian vesicle are brought into contact again, and then appear under the form of a small puckered cyst.

There are other appearances in the ovary totally unconnected with pregnancy, which so resemble the *corpus luteum* disappearing, in which a central cavity has existed, that no confidence can be placed upon it in this stage. Cysts in contracting become puckered up, and assume quite the same appearance. This will be evident on referring to the Plate. Fig. 11 is the representation of the ovary of a patient who died in the Glasgow Fever Hospital, twenty-eight days after delivery of a seven months child; and Fig. 12 exhibits a case of a similar kind, but where abortion had taken place earlier. Now, let us compare these with Fig. 5, at the lower part of which ovary we see a cyst; and indeed the appearance of such puckered up cysts is familiar to many.

We may remark, then, in summing up this part of the subject, that little or no confidence is to be placed in the appearance of the cyst alone, unless between its layers we have a yellow substance, still visible. The central cicatrix, however, more especially when surrounded by more or less yellow matter, is an undeniable proof that the individual had been pregnant.

PART II.—FALSE CORPORA LUTEA.

I now enter upon the consideration of false, virgin, or pseudo-*corpora lutea*, as they have been variously termed. This is a subject which has caused great discussion amongst medical authors, and it is here where the practical bearing of our subject shows itself. In some cases it is of the greatest importance to tell a true from a false *corpus luteum*. This distinction became of great importance, in a trial which took place at Liverpool thirty years ago. Charles Angus, Esq. of Liverpool, was, in September 1808, tried at Lancaster for the murder of Miss Burns, a female residing in his house. The symptoms previous to her death, and the appearances observed on dissection, were such as to warrant a suspicion that she was poisoned. The medical examiners also found the uterine organs in such a state as to lead them to declare, that in their opinion the deceased had been delivered a short time before her death of a fœtus which had nearly arrived at maturity. It is the appearances in the uterus and appendages alone that we have to consider. The uterus was found so large as to be capable of containing nearly a quart of fluid. Great difference of opinion prevailed, as to whether or not the appearances in the uterus were the result of a delivery having recently taken place, or arose from the dilatation and recent expulsion of a collection of hydatids. It was not until after the trial that the ovaria were examined. They were then divided in the presence of a number of physicians, and a *corpus luteum* distinctly perceived in one of them; and certificates were received from Drs Denman and Haighton, Messrs Henry Cline, Charles M. Clarke, Astley Cooper, and Abernethy, all stating that it exhibited appearances, which could be alone explained on the idea of an advanced state of pregnancy.

Another case which shows the importance of distinguishing accurately between a true and a false *corpus luteum* occurred several years ago in Edinburgh. A prosecution was raised against four medical students for disinterring the body of a lady in Glasgow. The body happened to be so disfigured that it could not be identified by the relations. The ovaries, however, were examined, and it was reported that a true *corpus luteum* was found in one of them, which decided that they had not belonged to the lady in question, who was a virgin and advanced in life. On the trial, great contradiction took place between the opinions of the medical witnesses, one-half of whom asserted that the *corpus luteum* in question, was a true *corpus luteum*, while the other half maintained that it was not. The body of this individual was afterwards identified by a dentist who produced a cast of the gums. While the above cases show the uncertainty which pervades the profession on this point, it not the less forcibly points out to us the necessity for its farther elucidation, as circumstances might arise as in the last mentioned case, which might again call our professional opinions before the public, when it is desirable we should be better informed than on the occasion just mentioned.

A case occurred lately in Edinburgh which illustrates this subject, and, with very little alteration, might have brought forward the opinions of the profession on it. A lamplighter residing in the Canongate was indicted for the murder of his wife. It appeared that the parties had been married eight years, and had had no family. The man was a sober and decent person, while the woman was addicted to the use of spirits. Latterly she had become acquainted with a young man, whose frequent visits to her in the absence of her husband excited suspicions against them. This man, in a fit of passion and jealousy, inflicted on her head wounds which proved fatal. The uterine organs were removed at the inspection and examined afterwards. The right ovary presented externally an enlargement of the size of an ordinary marble, of a dark purple colour, having several minute vessels ramifying on its surface, a distinct depression in its centre, and the appearance of a minute cicatrix. On cutting into it the structure and appearance of a very early *corpus luteum* was observed which was formerly described. The uterus contained an extremely soft decidual membrane; but no ovum could be detected, although minutely and carefully examined. Indeed, although this person had conceived, there can be little doubt, from the puckered and contracted appearance of the fimbriated extremities of the Fallopian tube, which would hardly admit of a small probe to enter, that no ovum could have passed into them.

In this case, it is possible that the woman had conceived by her husband; but it is much more probable that she had not, and that the husband had great cause of provocation. But let us suppose that the husband had been absent for a month or so, and had inflicted similar blows on his return; it would have become a question of the greatest importance, to have determined, not only if that was a true *corpus luteum*, but whether or not it was possible to have been produced,—the result of a conception before his departure. Although this case is in so far imaginary, yet the circumstances supposed are very likely to have happened, and the appearances observed in the ovary, if carelessly examined, would either have been set down on the one hand as a coagulum of blood, or as bearing at least none of the marks of the *corpus luteum* as described by authors.

THE ORIGIN OF FALSE CORPORA LUTEA AS CONNECTED WITH THE CHANGES WHICH PUBERTY INDUCES.

For the purpose of enabling us to comprehend the manner in which many of these substances are produced in the ovary, it will be necessary for us to glance very shortly at the changes which puberty effects on these parts. On the occurrence of this change in the internal as well as the external economy of the animal the Ovaries, which are the prime movers, the essential cause of them, undergo various and remarkable differences. They are increased in size, and have one or more of the vesicles protruded from their surface.

Simultaneous changes are at the same time effected in the uterus and Fallopian tubes, by which, in the whole class of the Mammalia, a discharge from the uterus and tubes takes place, indicating that this change has occurred. In the lower animals this discharge is colourless and exceedingly sparing in quantity, while in the human female it is of a dark-brown colour, and is usually in large quantity. I am aware that great variety of opinion exists regarding the question, whether the state of heat in the lower animals, and that of menstruation in the human female, are to be considered the same. There is such a degree of similarity in the two actions, that I am of opinion they cannot be considered different. That the ovaries are the cause of this change both in the lower animals and human female, may be regarded as proved by Mr Yarrell in fowls; and the cessation of the discharge proper to the period of heat is well known to follow the removal of the ovaries in bitches, rabbits, and more especially in swine, in the latter of which it is daily practised.

In the human female, Mr Charles Pears[*] has recorded a very interesting case of congenital absence of the ovaries where the patient had a masculine appearance, and no monthly changes had ever occurred. Mr Pott[†] has related a very interesting case also, where the ovaries were excised, and where the patient ceased to menstruate. (The changes which take place in the ovaries, as the enlargement and rupture of prominent vesicles, I shall consider more fully afterwards.) The appearances of congestion of the membrane lining the uterus and tubes in the lower animals and human being is of a similar nature.[‡]

The menstrual discharge disappears like heat in the lower animals during gestation, and it ceases simultaneously in both as the period of procreating life closes. The only difference which is found to exist between the two states, consists in impregnation taking place in the lower animals during the season of heat, and not in the human being during menstruation. It is a generally allowed fact, however, that impregnation most generally occurs in the human body shortly after the cessation of the monthly discharge. This difference I am inclined to attribute, not to any dissimilarity of function in the two classes of animals, but to the presence of a copious discharge coming from the whole course of the Fallopian tubes and uterus, which must of a necessity prevent the access of any seminal fluid along these parts, while in the lower animals, where the discharge is extremely trifling in quantity, (and in some animals it is hardly more than an increased moisture of the parts), no barrier exists to the passage of the seminal fluid. On the contrary, every thing assists (from the extreme activity of all the vital actions of the parts), to facilitate its transmission to the ovaries.* The changes which take place in the last named organs, too, are of a very similar nature. When the ovaries of an animal killed while in this state are examined, they are found to be much increased in size, partly from their increased vascularity, and partly from a number of protuberances on their surface. These are the enlarged Graafian vesicles. In some of the lower animals, as the pig and ewe, whether the animal has connection with the male or not, towards the termination of the season of heat these burst of their own accord, sometimes without any effusion of blood whatever. At other times the vesicle is quite filled with this substance, and not unfrequently a small quantity is effused into the vesicles, which soon becomes deposited in the form of a thin layer all around the interior of the vesicle. It is not difficult to foretell what becomes of the two former instances; in the first the vesicle contracts into the form of a small cyst, and is soon absorbed from the ovary; in the second, the colouring globules of the blood are in a short time taken up, leaving a yellowish irregularly-shaped mass, generally of small size. In the third instance, however, more difficulty will be experienced. As the vesicle which has become the seat of the layer of blood in its interior contracts, it is evident that the blood having become firm, will be puckered up in a similar way to the true *corpus luteum.* This form of false *corpus luteum* we have only seen in the lower animals, and can at once be distinguished, by its opening into the cavity of the peritoneum, remaining long in a patulous condition, and the absence of any lining membrane to its cavity. Dr Montgomery refers to this change in the human female as a frequent one. We cannot say that we have been satisfied with it there, although, from its occurring in the lower animals, and the statement of Dr Montgomery, renders it a subject of the greatest importance to be attended to.

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[*] Philosophical Transactions for 1805, p. 225; and for a number of very interesting cases of this description, the reader is referred to Dr Simpson's article on Hermaphroditism in the Cyclopedia of Anatomy and Physiology, p. 715.

[†] Pott's Surgical Works, Vol. ii. p. 210.

[‡] "The Internal parts of Generation, (in the rabbit,) were exactly in the same state as external, that is as black as ink, from congested blood." (Cruikshanks in Philosophical Transactions for 1797.)

In the human female the period of menstruation is also marked by prominence of one or more of the vesicles, and by their occasional rupture. This circumstance was, so long ago as the year 1672, pointed out by Kerkringius.† His words are, "aliquando fœminæ dejiciunt hæc ova, imprimis, tempore menstruorum." Dr Lee of London has of late directed more particularly the attention of the profession to this circumstance in the article Ovaria, in the Cyclopedia of Practical Medicine, to which I have had occasion previously to refer. In this paper, he makes no mention of the remark of Kerkringius, but relates several cases which he had an opportunity of examining, in which death had taken place during the menstrual period, and in which he found a Graafian vesicle, enlarged, protuberant, and vascular, and in others, an aperture in the peritoneal coat, communicating with a cavity of greater or less extent in the interior of the ovary, and filled with coagulated blood. One of his cases I subjoin for the purpose of illustration. "In a patient who died from cholera while menstruating, the ovarium was much larger than natural, and at one point, there was a small irregular aperture in its peritoneal coat, through which a portion of a slender coagulum of blood was suspended. On cutting into the substance of the ovarium, it was found to be occupied by three small cavities or cysts, one of which was filled with a clear ropy fluid, another with semifluid blood, and the third, which communicated with the opening in the peritoneal coat of the ovarium, with a firm coagulum.

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* This theory of impregnation seems now to be the one which is most generally received at the present day.

† Philosophical Transactions for 1672.

Very similar to the case above-mentioned is one, for which I am indebted to the liberality and kindness of Dr J. Reid, and a view of the peculiarities of which is represented in Fig. 18. The patient, aged 22, had been bedridden in the Royal Infirmary for three weeks, in consequence of a severe burn over the chest and abdomen, and of which she died. The uterine organs were removed entire, and examined afterwards. The uterus and Fallopian tubes were found filled with menstrual blood. On examining the right ovary, a dark protuberance was observed to exist, and the appearance of a cicatrix on the surface of it. On cutting into this it was found to consist of a large coagulum of blood, which did not seem to be bounded or defined by any distinct membrane, but was rather effused into the substance of the ovary. I fear, however, that this appearance of effused blood has been too seldom observed to be deemed a universal occurrence, and more especially to the extent which Dr Lee has mentioned, and which is represented in our drawing of the natural size. It appears to me more probable that the most usual appearance must be simple enlargement of a vesicle, without rupture, the increased quantity of fluid in which becomes reabsorbed afterwards. Nothing is more common than to observe in the ovaries of women during the child-bearing period of life a number of cysts puckered up to an astonishingly small bulk, and feeling quite firm. Fig. 10, at A. represents several of these bodies of different sizes. If an effusion of blood into a Graafian vesicle or into the tissue of an ovary always occurred at each menstrual period, it is most probable that we should always find one or more of these coagula in different stages of absorption in the ovaries of every woman who dies during menstrual life. Now this we know is not always the case, for I think we are safe in alleging that six out of every ten ovaries of patients dying during that period of life, and unconnected with pregnancy existing or recently terminated, present no appearance whatever of red, pinkish, or yellow-coloured substances, which I shall afterwards show are the colours that blood assumes in the progress of absorption from the ovary. While the circumstance of effusion of blood occasionally taking place in such cases points out the similarity between the season of heat in the lower animals, and menstruation in woman, it not less clearly shows us, one of the many ways in which these false *corpora lutea* are formed.

DIFFERENT VARIETIES OF FALSE CORPORA LUTEA.

False *corpora lutea*, then, in the human female, or yellow bodies which are liable to be mistaken for the true structure, may be of two different kinds, arising from as many causes.

The *first* order of *corpora lutea* arise, as I have before-mentioned, from effusion of blood into a Graafian vesicle. These have been well represented by Dr Montgomery. They have more or less of a regular form, but their internal structure is homogeneous, and without any appearance of radiation, central puckering, or cavity.

The *second* set also originate in effusion of blood, but they are preceded by a diseased state of the ovary, viz. apoplexy. In this species the blood is effused into the tissue of the ovary, and of course assumes a very irregular appearance. These are to be found of various sizes, from that of a millet-seed to a pea, and once or twice we have seen them of the size of a good large marble. No one can mistake this appearance in its recent state; it is only as absorption goes on, and the colouring matter of the blood begins to be removed, that it assumes a yellow colour. M. Andral, in taking notice of this appearance in the ovary, says, sometimes the effused blood has a red, and sometimes a brown colour. "We not unfrequently observe beside or around such an effusion a fine yellow colour, similar to that which is found on the parietes of certain collections of extravasated blood in the brain."* When these coagula have remained still longer in the ovary their interior generally becomes filled with black matter, or assumes the appearance of a cavity, and we have them then presenting to us, the aspect of an irregular-shaped soft membrane, either lined or not with a layer of black substance. In Figs. 13, 14, and 15, we have delineated these appearances, and where the gradual changes are very well marked. Fig. 13 is the coagulum of blood alone, of an irregular shape; Fig. 14 has been a similar coagulum, but its edges have assumed the yellow colour, its centre still retaining some of its early appearance; and Fig. 15, which was procured from the body of a female who died in the Glasgow Fever Hospital. Numerous yellow bodies are seen, some with, and some without, a cavity, some filled with, and others without, melanotic matter, but all presenting such appearances, as no doubt might be mistaken for *corpora lutea.* It will be observed that the substance marked at A, Fig. 15, has all the characters of the true *corpus luteum*, the regular shape, the radii and the central cicatrix. This specimen excited at first a good deal of interest and discussion; many individuals being inclined to consider it nothing more, than one of numerous cysts seen in the ovary. Upon making inquiry, however, it was ascertained that the patient had miscarried five or six weeks before her death.

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* Pathological Anatomy, Vol. i. p. 676. A similar change takes place in coagula of blood found in the cavities of veins from inflammation of their coats, or mechanical obstruction.

Two other forms of this pseudo-structure have been pointed out by Dr Montgomery. "I have often found," says this author, "a vesicle enlarged to three or four times its natural size, full of fluid, and its internal surface of a bright yellow colour." When the vesicle bursts or collapses from absorption of the contained fluid " this deposit closes upon itself, and forms an irregular line of junction, which is generally darker than the rest of the structure." This appearance we have often seen unconnected with a vesicle, as has been before-mentioned.

I think that the deposit of blood on the internal surface of the vesicle, before it bursts, or the contained fluid is absorbed, as Dr Montgomery has described it, is very likely to be mistaken by individuals unacquainted with the structure of the true body. It will be easily distinguished, however, by the want of the foldings and internal lining membrane, which we have mentioned in a former part of the paper, to be so characteristic of a true *corpus luteum* in its early stage.

The second form of false *corpus luteum*, to which we before referred as pointed out to us by Dr Montgomery, is tubercular deposits in the ovarian structure. These, no doubt, have been mistaken for the true body, as Dr Montgomery has shown.* They possess, however, little or no resemblance to true *corpora lutea*, at any stage of their progress, or even in the act of disappearing. They never have any striated appearance or central cavity, and they are generally numerous in both ovaries; besides these, they are always found in subjects who die of tuberculous disease. There is only one other appearance which is liable to be mistaken for the true body. We allude to small cysts filled with yellow-coloured fatty matter.

In conclusion, then, we would remark that false *corpora lutea* in the human female may arise ;—

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* Opera citata, p. 24.

First, From the bursting and subsequent filling of a vesicle with blood, as in menstruation.

Second, From partial effusion of blood into a vesicle, either with or without rupture of it.

Third, By reabsorption of the fluid of a morbidly enlarged Graafian vesicle, giving rise to a puckered cyst.

Fourth, From effusion of blood into the tissue of the ovary, the apoplexy of that organ.

Fifth, Tubercular deposits.

Sixth, Cysts filled with yellow fatty matter.

These are to be distinguished from the true *corpus luteum* by the following marks,—

They in general have an irregular form.

They want the central cavity lined with a distinct membrane, or the central puckered cicatrix.

They have no concentric radii.

They are frequently numerous in both ovaries.

In a future communication it is my intention to consider the much debated question, whether or not the true *corpus luteum*, as it has been described, ever occurs in the human subject or any of the lower animals, without impregnation having taken place.

Explanation of the Plate.

Figs. 1 and 2 represent the external appearance of the ovary, and Fig. 2 the section of the *corpus luteum* of a female who died a few days after impregnation.

Fig. 3. *Corpus luteum* about the second or third week after conception; it exhibits the plicated structure and central fibrinous mass.

Fig 4. *Corpus luteum* about the sixth week after impregnation.

Fig. 5. *Corpus luteum* at second month.

Fig. 6. *Corpus luteum* two hours after mature delivery.

Fig. 7. *Corpus luteum* thirteen days after delivery at full term.

Fig. 8. *Corpus luteum* three days after delivery at full time.

Fig. 9 exhibits two *corpora lutea* in the same ovary, the one about half the size of the other. The patient died on the fourth day after delivery at the full time. She had miscarried in a previous pregnancy at the sixth month, and was impregnated three months after.

Fig. 10. *Corpus luteum* one month after mature delivery. The patient died from inflamed uterus.

Fig. 11. *Corpus luteum* six weeks after abortion, at the seventh month.

Fig. 12. *Corpus luteum* about six weeks after abortion, at sixth month.

Fig. 13. Coagulum of blood in the ovary of a young female, who died during menstruation.

Fig. 14 represents a coagulum of blood, from the edges of which the colouring matter has been absorbed, constituting one form of false *corpus luteum.*

Fig. 15. Numerous false *corpora lutea* with melanotic centres. The patient miscarried some weeks previous to her death. The true *corpus luteum* is represented at *a*.

All the *corpora lutea* are of their natural size.

ART. IV.—*Abstract of a Royal Ordonnance which was promulgated on the* 12*th August* 1836, *relative to the organization of the Medical Department of the French Army.* By HENRY MARSHALL, F. R. S. E., Deputy Inspector-General of Army Hospitals.

THE principal object of the following abstract is to excite attention to the *ordonnance* in question, which in several respects deserves consideration, more especially in regard to the *instruction*, *examination*, and *promotion*, of medical officers.

1. *Composition of the Department.*—The medical department is to consist of three classes of officers, namely, physicians, surgeons, and apothecaries, which are to be arranged as follows:

MEDECINS.	CHIRURGIENS.	PHARMACIENS.
	Sous-Aide	
Adjoint	Aide-Major	Aide-Major
Ordinaire	Major	Major
Principal	Principal	Principal
Inspecteur	Inspecteur	Inspecteur

In time of peace the strength of the different ranks borne upon the establishment will be as follows:

Medecins,	Inspecteurs,	2
	Principaux,	8
	Ordinaires,	53
	Adjoints,	24
Chirurgiens,	Inspecteurs,	2
	Principaux,	12
	Majors,	223
	Aides-Majors,	374
	Sous-Aides,	410
Pharmaciens,	Inspecteur,	1
	Principaux,	8
	Majors,	27
	Aides-Majors,	59

2. *Conseil de Santé.*—The council will consist of five inspectors, but when the minister at war thinks it necessary to make some addition to the number of members, he may do so from the rank of *officiers de santé principaux.*

The council is expected to furnish a *programme* of the examination (*concours*), to which pupils (*elèves*) and candidates for the rank of *chirurgiens sous-aide* are required to submit.

The members of the council are to form part of the *jury medical* at the *concours* which takes place in the hospital *de perfectionnement*, for the ranks of *chirurgien sous-aide*, of *chirurgien aide-major*, and of *pharmacien aide-major*, and for admission into the *professorat* (the department of instruction.)

They are to give their opinion to the minister at war upon the claims of medical officers to promotion, as also where and how they are to be employed. The opinion of the council in regard to the claims of officers implies nothing more than a simple report or roll of the candidates who are in their estimation the most deserving of promotion.

The council is to present annually to the minister at war a list of qualified candidates for the appointment of *medecin adjoint.*

The members of the council are to inspect the hospitals and the troops when directed to do so by the minister at war.

They are to submit for the consideration of the minister at war whatever measures may appear likely to be beneficial to the army, and they are to give their opinion upon all questions which he may refer to them.

They are to institute a correspondence with medical officers of the military hospitals, as also with regimental medical officers, upon subjects which are connected with medical science, and the medical care of the troops.

3. *Hospitals of Instruction.*—There are three hospitals of instruction, namely, one in each of the following garrisons, Strasbourgh, Metz, and Lille,[*] and an hospital *de perfectionnement* in Paris.

The course of instruction taught in the hospitals may be divided into three heads :

1. The diseases to which soldiers are particularly liable.
2. Gunshot wounds and surgical operations.
3. A knowledge of medicines, and the formula used in military hospitals.

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[*] The hospital at each of these three garrison towns is capable of containing 800 beds. The buildings of the hospital at Strasbourgh are placed round an oblong square divided by two ranges of apartments, which are partly occupied by sick officers. These wards usually contain from 30 to 60 beds. The bedsteads are of iron, with a broad plate at the head and foot, on which are placed medicines for the sick. There are commonly about 26 pupils at this hospital of instruction. There is a good library for their use, which, besides the standard works on military medicine and surgery, contains all the medical French periodicals, and among them the "*Journal de Medecine et de Chirurgie Militaire*," published under the direction of the minister at war, a copy of which is sent to every medical officer in the army. I hope that our Secretary at War will by and by exercise an equal degree of liberality in furtherance of a similar object in the British army. Under the auspices of the Duc de Choiseul, when Minister at War in 1763, Dr Richard (Baron Hantesierk,) a member of the *Conseil de Santé*, commenced to publish selections from the reports and communications of the medical officers of the army, and, with the exception of a few years, about the beginning of the present century, this highly laudable and useful undertaking has been continued to the present time,—two octavo volumes being published annually. It is obvious that a publication of this kind is calculated to elicit much important practical information upon the best means of preserving the health of soldiers in different climates and under different circumstances, and to excite and preserve a spirit of emulation among the several ranks of medical officers, by affording them an opportunity of displaying their talents for observation, zeal, and industry.

The number of officers employed in the department of instruction in each of the hospitals is to be fixed as follows:

1. A *premier professeur medecin*, whose department is to be clinical medicine, pathology, and general therapeutics.
2. A *professeur medecin*, for medical pathology.
3. A *professeur medecin*, whose duty is to deliver instructions upon the best means of preserving the health of soldiers,* and upon legal medicine.
4. A *premier professeur chirurgien*, who is to teach clinical surgery, and to give instructions upon the duties of medical officers, under whatever circumstances they may be placed.
5. A *professeur chirurgien* for anatomy, physiology, and the treatment of varicose disease.
6. A *professor chirurgien* for surgical pathology and surgical operations.
7. A *premier professeur pharmacien* for medical chemistry, analysis, the action of reagents, toxicology, medical topography, and meteorology.
8. A *professeur pharmacien* for materia medica.
9. A *professeur pharmacien* for botany and the preparation of drugs.

The medical officers employed in the department of instruction are to take the charge of sick in the same manner as the medical officers of the ordinary military hospitals.

4. *Of the Concours or Public Examination.*—The appointments of the junior officers of the medical department, as well as the nomination of officers to the department of instruction, are competed for by candidates at a *concours*.

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* The importance of the duty of communicating instructions upon military hygiene to military as well as medical officers, appears to have engaged the attention of the medical department in France before the Revolution. Dr Chaussier in 1788 recommended to the French government, that "Chaque chirurgien major de regiment reçut l'ordre d'ouvrir un cours où officiers et soldats auroient recu des instructions sur les moyens de soigner sa santé et celle des autres. Il etoit en effet indécent qu'on reconnût la necessité d'une theorie pour la conservation des chevaux et qu'on n'eût pas eu la pensée d'indiquer plutôt des moyens de conserver les hommes. Ou envôyoit des officiers suivre un cours à l'ecole vétérenaire d'Alfort et aucune instruction n'etoit donnée pour maintenir en santé les soldats dont l'officier doit être en tout le guide, et l'appui." How far this suggestion might with advantage be followed in the British army, is a subject which deserves consideration. It is presumed that military hygiene forms an important part of the course of study to which candidates for the medical department of the army must prove themselves acquainted, and consequently that they are qualified to communicate much useful information to military officers, in regard to the best means of preserving not only their own health, but also that of non-commissioned officers and soldiers, under the various circumstances to which troops are exposed. It is obvious that knowledge of this kind would enable military officers to perceive why certain circumstances are beneficial or injurious, by which means they might avoid some of the many causes of physical inefficiency and impaired health. Much information of a similar kind might also be communicated with advantage to non-commissioned officers and soldiers,—information which would promote their own welfare, and ultimately be beneficial to the state.

The composition of the *jurys medicaux* varies according to the rank of the candidates they have to examine. For the admission of surgical pupils, the chairman of the medical jury is to be alternately one of the *officiers de santé en chef* of the hospital where the examination takes place. In the hospitals of instruction, the chairman is to be alternately one of the *premiers professeurs.* But in a *concours* for the *professorat* the chairman is to be a physician surgeon or apothecary, according to the branch of the profession which the candidate aspires to teach. The officer who presides at a *concours* for the *professorat* is appointed by the minister at war.

When the professional examination has terminated, the *sous intendant militaire* is to collect the votes of the medical jury, and to draw up a list of the candidates in the order of their respective scientific attainments, moral conduct, and services in the army. This list is to be signed by the jury.

5. Of the Appointment and Promotion of Medical Officers.— Every year a *concours* is to be held in the month of August, in Paris, Metz, Strasbourgh, Lille, Lyon, and other towns, for the admission of the requisite number of surgical pupils. On the 1st June, a *programme* is to be annually published, which will announce the number of pupils required, and the subjects upon which candidates are to be examined. The priority of the examination of the candidates is to be determined by lot.

Each candidate is required to show, *1st,* That he is a native of France; *2d,* That he is above 16, and that he has not reached 21 years of age; *3d,* That his elementary education qualifies him for being admitted a medical pupil, according to the regulations of the medical faculty; *4th,* That he is free from any disease or disability which disqualifies him for the army. The certificate of health requires to be given by a medical officer of the army on full pay.

When the *concours* takes place at an ordinary military hospital, the jury is to consist of three *officiers de santé en chef* of the hospital, and two other medical officers, who are to be appointed by the *intendant militaire.* In the hospitals of instruction, the jury is to be composed of three professors and two medical officers, to be named by the *intendant militaire.*

A list of the qualified candidates is to be transmitted to the minister at war, together with a specimen of the penmanship and composition of each. These documents are to be submitted to the *conseil de santé,* who will inscribe their names in the order of their respective attainments for the minister at war. Should the list meet with his approbation, he issues warrants or letters of admission to the required number of candidates, according as the names stand upon the roll.

The pupils *(élèves)* are expected to join the hospital of instruction to which they are assigned by the middle of October, and those who fail to present themselves by the 1st of November forfeit their appointment.

A complete course of instruction comprehends a period of three years, two years being spent in an hospital of instruction, and one year in the hospital *de perfectionnement.*

The pupils are to be divided into two grades or classes, the second or lowest class comprehending the pupils who have been last admitted, and the first class the pupils who have completed the course of instruction of the second class.

Before pupils are transferred from the second to the first class, or from the first class to the hospital *de perfectionnement,* they must submit to an examination which takes place annually in the month of August, according to a *programme* drawn up by the *Conseil de Santé,* approved by the minister at war, and transmitted annually to the hospital of instruction.

Pupils who, after two or three years residence in an hospital of instruction, do not acquire the requisite scientific attainments to warrant their being transferred to the hospital *de perfectionnement* in Paris, are to be dismissed.

Pupils are placed under the control of military discipline during the course of their studies, and dismissal is the usual punishment for delinquencies.

Of the rank of *Chirurgien Sous-aide.*—No candidate is to be appointed to the above rank, unless he has studied two years at least in an hospital of instruction, and one in the hospital *de perfectionnement.*

Pupils who have completed the requisite course of study are to be examined at a *concours* in the month of August, for the purpose of ascertaining the candidates who are qualified for the appointment of *Chirurgien Sous-aide.* The medical jury is immediately after the *concours* to draw up a roll of the qualified candidates, in the order of their respective professional attainments, and the excellence of their moral character.

Pupils who, after studying two years at the Hospital *de perfectionnement* in Paris, and who are found disqualified for the appointment of *chirurgien sous-aide*, are to be dismissed.

The names of the pupils who are found qualified for promotion are to be published in the *Journal Militaire.*

The first four of the qualified candidates on the roll are to be employed as *chirurgien sous-aide* in an hospital of instruction, and the other candidates are to be appointed in the order they stand on the list to vacancies, as they occur in the ordinary military hospitals.

The *chirurgiens sous-aides*, who are in the first instance appointed to the ordinary military hospitals, are to be transferred, according to their standing in the service, to hospitals of instruction, and eventually to the hospital *de perfectionnement*, and the hospitals in Paris.

Chirurgiens sous-aides are allowed to reckon as effective service *pour la retraite et la reforme*, the time they have served as pupils after 18 years of age.

Of the rank of *Chirurgien aide-Major*.—No candidate is to be appointed to the rank of *chirurgien aide-major* who has not served three years as *chirurgien sous-aide*, and obtained the degree of M. D.

About the end of August every year, the *chirurgiens sous-aides* who have been one year employed in the hospital *de perfectionnement*, and other hospitals in Paris, are to be publicly examined for the rank of *chirurgien aide-major* in regiments of the line.

The medical jury for the examination of this class of candidates is usually composed of an *inspecteur du service de santé*, three professors of the hospital *de perfectionnement*, and three medical officers of the army, who are appointed for the occasion by the minister at war.

The names of the *sous-aides* found qualified for promotion at the *concours* are to be arranged by the jury in the order of their respective merits and claims for promotion. The candidates on this list who have obtained the degree of M. D. are all promoted to the rank of *aides-majors* as vacancies occur, one-half according to their standing on the roll, and the other half by selection from the first ten on the list of each year.

The *chirurgiens sous-aides* who are found disqualified for promotion are remanded to their studies in an hospital of instruction for one or two years, and if they are then considered not sufficiently qualified, measures are to be adopted for their discharge from the service.

No *chirurgien aide-major* is to be appointed to an *arme speciale*, a military hospital, or a *poste sedentaire* before he has served two years in a regiment of the line, or in *les ambulances*, or the hospital of an army on active service. One-half of these appointments are to be made according to seniority on the list, and the other half by selection. The military inspectors general are to select the officers who are attached to the regiments, and the *intendants militaires* those who are employed in the hospitals and *ambulances*.

Of the rank of *Chirurgien Major*.—No candidate is to be appointed to the rank of *chirurgien-major* to a regiment who has not served four years as *chirurgien aide-major*, and obtained the degree of M. D.

The *chirurgiens aides-majors* who are employed in the military hospitals, *postes sedentaires*, and *les armes speciales*, are alone eligible to be promoted to the rank of *chirurgien-major* in regiments of the line. Appointments to this rank are to be made one-half by seniority, and the other half by selection. The inspectors-general of armies and the *intendants militaires* are to recommend annually the candidates for promotion by selection.

Chirurgiens-majors require each to serve three years as surgeon to a corps of the line, or in *les ambulances*, or an hospital of an army on service, before they are eligible for being appointed to an *arme speciale*, or military hospital in France, or a *poste sedentaire*, to which they are appointed, one-half by seniority, and one-half by selection.

Of the rank of *Pharmacien Aide-Major.*—The *chirurgiens sous aides*, who are destined *au service de la pharmacie*, and who have been found qualified for the rank of *aide-major*, compete annually by *concours* for the above rank. Vacancies in the hospitals are to be filled up by qualified candidates, according to the *ordre de merite*; but it is understood that no candidate is to be appointed who has not obtained the degree of M. D., or who is not a *maitre en pharmacie*.

Of the rank of *Pharmacien-Major.*—Candidates who have served four years as *pharmacien aide-major* may be promoted to the rank of *pharmacien major*. One-half of the appointments are to take place according to seniority, and the other half by selection. The *intendants militaires* are to recommend the candidates they select for promotion.

Of the rank of *Medecin Adjoint.*—Candidates for this rank require to have served three years as a *chirurgien aide-major*, one year as such in an hospital. Their fitness for the duties of the situation must also be attested by the *conseil de santé*.

The *conseil de santé* will present annually to the minister at war a list of medical officers who are eligible for the rank of *medecin adjoint*. Vacancies are to be filled up from this list, one-half according to seniority, and one-half by selection.

Of the rank of *medecin ordinaire.*—Candidates for this rank require to have served two years at least as *medecin adjoint*. Vacancies are to be filled up, one-half according to seniority, and one-half by selection. The selected candidates are annually to be recommended by the *intendants militaires*.

Of the rank of *Principal* in each of the three branches of the medical department.—No candidate is to be promoted to the rank of *medecin principal, chirurgien principal*, or *pharmacien principal* before he has served four years in the rank immediately preceding, or unless he has acted as principal officer of one of the branches of the department to an army for a period of two years, or been for as long a period a professsor in an hospital of instruction.

The duty of selecting officers to fill this rank belongs to the minister at war.[*]

Officers of the rank of *principal* are chiefly employed in performing the duties of *premier professeur* or *officier de santé en chef* in hospitals of instruction, or as *chefs de service* of important establishments. Under the direction of the minister at war, or the *conseil de santé* they are occasionally employed in the inspection of a secondary class of hospitals, and in the execution of similar duties. In time of war they are employed as *officiers de santé en chef d'armée*, or as *officiers de santé principaux de corps d'armée.*

Of the rank of *Inspecteur.*—A candidate for this rank requires to have served three years as principal. Officers of the rank of inspector are all selected for promotion by the minister at war.

6. *On the Examination of Candidates for the Professorat.*—*Les Medecins Ordinaires*, *les Medecins Adjoints*, and all medical officers who have received a certificate of being qualified for the appointment of *medecin adjoint*, are permitted to compete by *concours* for the appointment of *medecin professeur* in the military hospitals of instruction, and the hospital *de perfectionnement.*

Les Chirurgiens-majors, as also *chirurgiens-aides-majors,* who are employed in hospitals, or in *postes sedentaires* and *des armes spéciales,* are entitled to compete by *concours* for the appointment of *chirurgien professeur.*

Les pharmaciens-majors and *aides-majors* are entitled to compete by *concours* for the appointment of *pharmacien professeur.*

The *concours*, which is held for admission into the *professorat,* uniformly takes place in the hospital *de perfectionnement,* and the *jury medical* is composed of a member of the *conseil de santé,* who is to be president, four professors of the hospital, and four *officiers de santé,* who are to be named by the minister at war.

The examination of the candidates is to be conducted as follows: —1. An appreciation is to be made of the conduct and public services of each candidate. 2. Each candidate is to be requested to give an answer in writing to a question, which is to be the same to all the candidates. 3. He is to deliver a lecture upon a subject connected with the duties of the vacant chair. The candidates are to draw lots for the particular topic upon which each is to lecture. Twenty-four hours will be allowed to prepare the address. 4. Finally, a lecture, after a period of three hours preparation, upon a subject drawn by lot, and which is to be the same to all the candidates.

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[*] Colombier in his Code de Medecine Militaire, Vol. ii. p. 109, has made some very pertinent remarks upon the promotion of medical officers to the higher ranks. None should, he says, be advanced to these grades but " des gens distingués par leur merite, ou qui aient rendu quelque service à l'etat dans ce genre; parceque, devant commander à un nombre considerable de gens de l'art, dont la plupart ont euxmemes, ou sont supposés avoir des talens, et qui ont aussi rendu ou rendent des services, il est essentiel de ne pas blesser l'amour propre des subordonnés."

It is presumed that the lectures will require about an hour to deliver, and the candidates are expected to speak from short notes only. For a course *de medecine operatoire*, candidates are required to show their practical skill in an amphitheatre. He is the successful candidate who obtains the suffrages of a majority of the examiners.

The appointments of *medecin*, *chirurgien* or *pharmacien premiers professeurs* in the hospitals of instruction, and in the hospital *de perfectionnement* are made by the minister at war, upon the recommendation of *intendants militaires*, who make their selection from the medical officers attached to these establishments, and belonging to the *professorat*. Should it be deemed expedient, the minister at war may direct a vacant appointment of this class of medical officers to be filled up by *concours*.

The appointment of *professeur* has no relation to the rank of a medical officer in the service. A *premier professeur* is to be recognized as chief of the establishment to which he is appointed, whatever may be his rank or standing in the service.

7. *Of Subordination.*—Subordination is to be strictly observed among medical officers in regard to medical duties. In cases where the rank is the same seniority is to be determined by the dates of the respective appointments.

Medical officers of all ranks are amenable to the control of the respective military authorities in everything which regards the general regulations of the service and military discipline. The military officer who commands a corps, regiment, or detachment, is to be obeyed, whatever his rank may be.

8. *Of the Pay.—Chirurgiens-majors* and *chirurgiens aides-majors* are respectively to receive the same pay as captains and lieutenants of the first class.

9. *Of the Uniform of Medical Officers*, vide Appendix.

10. *General Regulations.*—Except officers belonging to the *professorat*, no medical officer employed in the hospitals of Paris is to receive an increase of rank in the same hospital.

Promotion to the rank of *principal* in one of the three branches of the medical department, is not necessarily to be followed by the removal of an officer from the station in which he is employed.

The period during which an officer is required to serve in each rank may be reduced one-half during war.

The regulations contained in this *ordonnance* in regard to promotion are not to be infringed, except under the following two circumstances:

1. When an officer shows an extraordinary degree of courage or devotion to duty, which must be inserted in the daily orders of the army or division to which a medical officer belongs.

2. When circumstances render it impossible to comply with the rules in regard to the filling up of vacancies.

APPENDIX.—*Uniform of the Medical Department.*

Coat, royal blue, single-breasted, standing collar.

Collar and facings for *medecins*, black velvet.

——————— *chirurgiens*, scarlet velvet.

——————— *pharmaciens*, green velvet.

Waistcoat, in winter, blue; summer, white.

Trousers, in winter, royal blue, without lace; summer, white duck or dimity.

Buttons, gilt; a device of the Esculapian serpent.

Boots, ankle; to be worn under the trousers.

Cloak, blue cloth; without lace.

Hat, cocked; fan or back part 10 inches; the front or cock 7 inches.

Undress.

Frock Coat, blue, double-breasted, two rows of buttons, collar straight.

Cap, blue; with a band of blue cloth, and a gold or silver tassel, in conformity with the colour of the regulation button.

For *medecins, chirurgiens, pharmaciens principaux*, the fringe of the tassel is to be about the thickness of unwrought twist.

For *medecins ordinaires* or *adjoints chirurgiens*, and *pharmaciens-majors, aides-majors* or *sous-aides*, the fringe is to be smaller.

Hat, } as in dress.
Sword, }

Embroidery, gold; pattern, a branch of the *acanthus* entwined by a serpent.

Distinctions of the Ranks of Medical Officers.

Officiers de santé en chief d'armée, embroidered collar, facings and pockets of the coat.

Premiers professeurs, embroidered collar and facings.

Medecins ordinaires, chirurgiens, and *pharmaciens-major*, commissioned as principal medical officers, embroidered collar and facings.

Medecins ordinaires, chirurgiens, and *pharmaciens-majors*, embroidered collar.

Medecins adjoints, chirurgiens, and *pharmaciens-aides-major*, two embroidered button-holes on the collar.

Chirurgiens sous-aides, one embroidered button-hole on the collar.

Elèvés (pupils), no embroidery.

Regimental medical officers wear the uniform of their rank in the department with the button of the corps to which they belong.

Conseil de santé, coat blue, turned up with red; skirt ornaments embroidered; collar and facings embroidered.

Trousers, blue cloth in winter; and in summer, white.

Button, yellow, with the device of the Esculapian serpent, and the words, "*conseil de santé des armees.*"

Hat, cocked, black feather, *tricolore* cockade and gold loop.

Sword, gilt hilt.

Officiers en traitement de reforme (officers who have retired from active service with a pension) are distinguished by the uniform of their respective ranks, except that the collar and facings are to be red velvet without embroidery or any similar ornament.

Officiers reformé sans traitement (officers who have been disbanded without any pension) wear no uniform.

ART. V.—*Observations illustrating the characters of a Febrile Epidemic which prevailed in Dominica in* 1838. By JOHN IMRAY, M. D.

DURING the latter part of the year 1837 and beginning of 1838, intermittent fever prevailed as an epidemic in the town of Roseau and its vicinity, to a very unusual extent, confining itself, however, almost exclusively to the white and coloured natives of the island, and passing over, with scarcely any exception, the European residents. The course of this fever was in general extremely irregular, not only with regard to the period of accession, but also to the stages of each paroxysm. The attack sometimes commenced with violent rigors, and terminated, as usual, with copious perspiration; at other times no feeling of cold preceded the hot stage, which lasted for eight or ten hours or more, and was carried off by perspiration, or gradually subsided with hardly any appearance of moisture on the skin. The period of invasion could scarcely be relied upon in any case with much certainty. A patient might be attacked with the quotidian form, which, after continuing for some days, assumed the tertian or quartan type, and again, perhaps, lapsed into the quotidian, or became remittent. The fever often returned after an absence of several weeks, from some slight exposure, or without any apparent cause whatever. Excruciating pain of head, often restricted to one particular spot, was a general symptom, coming on sometimes a few hours before the febrile accession, and always leaving the patient during the intermission. The suffering from this cause was often so great, that the recurrence of fever was looked forward to with dread. So long as the fever continued of the intermittent form, no danger was to be apprehended; but in one or two cases it proved fatal by changing into the worst form of bilious remittent. The majority of cases were successfully treated by the usual remedies for intermittent fever; but in many instances the patients were afflicted for several months, the disease resisting every kind of treatment, until it seemed to wear itself out in the system; or health was recovered from the absence of those causes, by change of season or otherwise, in which the fever originated.

In the months of February and March, the disease gradually declined, and by the middle of April it had almost entirely disappeared, when a fever of a very different and much alarming character broke out in the town of Roseau. If, in the first instance, the Creole population were the sole sufferers, and the European residents enjoyed an immunity from attack, it now fell to their lot to be the victims of a malady most formidable in its symptoms, and deadly in its effects. The young and strong in the vigour of health were struck down, and hurried out of existence in a few days or even hours. Europeans who had resided but a short time in this country were most liable to seizure; but many of those were attacked who had been within the tropics for some years, and whose constitutions, it might have been supposed, had become assimilated to the climate.

The onset of the disease, which was in general sudden and unexpected, and the course which it ran throughout, were marked by symptoms not only widely differing from the intermittent which had preceded it, but from the common remittent forms of the country. It was never ushered in by a distinct rigor, and in very few instances even with chills or any sensation of cold. The usual premonitory symptoms were a feeling of great debility, faintness, and giddiness, the slightest muscular exertion being only effected by a painful effort. A creeping sensation and soreness over the whole body were experienced, with inclination to vomit. These symptoms were accompanied or quickly succeeded by violent aching pain in the loins, stretching down the lower extremities, precordial oppression, vomiting, severe headach, and pains in the eyeballs, burning heat of surface, and great prostration of strength, the febrile action being modified by the age, sex, habits, and constitution of the patient, and length of time resident in the country. The pulse in general was weak and quick, occasionally full and strong, and sometimes scarcely above the natural standard; and in the latter instance, the first stage was often extremely insidious; very little pain might be complained of, with the exception of slight headach. There was perhaps a flush on the countenance; the eyes were suffused; and the patient was thirsty; but there was little or no irritability of stomach; the surface was constantly but not much above the natural temperature; and occasional perspirations took place, which did not diminish the heat of the skin. These symptoms continued for two or three days with scarcely any change, when suddenly black vomit made its appearance, or exudation of blood from the mucous membrane of the nose and mouth took place, or a train of cerebral and nervous symptoms set in, very soon ending in death. Such were the features that many cases presented; but this class was not, however, the most numerous.

In general the burning heat of skin continued, with violent headach and pain in the back and legs; the countenance in nearly every instance being flushed, and the eyes injected; the tongue at first slightly coated, afterwards acquired a thick brownish covering, or remained comparatively clean throughout; the thirst was urgent, every kind of fluid taken being almost instantly rejected; intractable vomiting forming a very general symptom. Under the influence of medicine, or spontaneously, copious perspirations in several cases broke forth, but these were never critical; and if relief was afforded, which did not often happen, it was but of momentary duration; the burning heat of skin, and the pains in the head or back, returning immediately after; but occasionally a perspirable state of the surface continued from the commencement to the termination. The odour of the cutaneous exhalations was often extremely disagreeable, as well to the patient himself as his attendants.

The bowels were in general difficult to be moved, requiring the action of strong purgative medicine, which was followed by dark-coloured and offensive evacuations. The fœtor became more intolerable towards the last stage. The above symptoms continued unabated, or rather increasing, without any remission occurring until the second, third, and seldom so late as the fourth day; then a cessation of all pain took place, and the febrile excitement subsided. The skin became cool and moist, the pulse sank to the natural standard, or below, and the stomach no longer rejected food or medicine; occasionally the tongue remained dry, and thirst continued, or precordial oppression, indicated by a heavy load at the stomach, was complained of. The patient now expressed in strong terms the pleasure he felt at the occurrence of this seemingly favourable crisis in his disease, and, considering all danger as over, would request to be allowed to dress and leave his bed, or order nourishment to be brought; nor was the patient alone likely to be misled by this delusive calm. His friends would perhaps scarcely be prevailed upon to believe that danger any longer existed, and even the medical attendant might at first be led astray by the apparently total disappearance of every bad symptom. During this stage, which continued from two or three to thirty-six hours, being rarely longer protracted, there might be some anxiety and uneasiness, but the patient gave no indication of suffering pain. A slightly yellowish tinge of the conjunctiva, and a dusky yellow colour of the face and neck was now observed; and although the patient's strength was at this time evidently giving way, he would strive to appear stronger and better than he really felt, and still desire to be permitted to leave his bed, but only sank back exhausted if he made the attempt.

As the last stage advanced a new train of symptoms made their appearance. The patient became very restless and faltered in his speech, often put his hands to his head and face, as if to remove some object; deafness and dimness of vision supervened; while he complained of not being able distinctly to see the person with whom he was conversing. A common symptom was irregular motion of, or rather a partial loss of power over the muscles of voluntary motion. The hand could perhaps only be raised to the head after several ineffectual attempts, or was stretched beyond or to either side of any object the patient wished to grasp. The arms were in many instances so constantly moved from one position to another that the hand could scarcely be kept steady for a sufficient length of time to admit of the pulse being numbered, and when the wrist was grasped a trembling or moving amongst the tendons was felt, but differing from ***subsultus tendinum***. The same tremor was perceived when the tongue was protruded from the mouth, and the muscles of the face were in continual agitation. The mental faculties now began to be affected, although hitherto they may have remained unimpaired or but little disturbed. Occasional incoherency was noticed in the patient's remarks after answering a few questions rationally. Unable to keep the attention fixed, he would break off into some other subject quite foreign to the matter of conversation,—this state of the intellectual functions soon terminating in delirium of a peculiar nature. All these nervous symptoms became greatly aggravated towards the close of the scene; the anxiety and restlessness indescribable, and the terror extreme, the patient being with difficulty kept in bed, and exhibiting at times a degree of muscular power altogether extraordinary, when compared with his former state of debility.

But sometimes a confident hope of recovery was entertained, when the symptoms were evidently fatal, and when at the commencement there was only despair of surviving. As death approached the confusion and embarrassment of speech was greatly increased, while the deafness continued, with strabismus, dilated pupils, and partial loss of vision. At this period in many instances before death, the irritability of stomach returned, accompanied by frequent discharges of dark-coloured fluid, like coffee-grounds, the dejections being nearly of the same nature; but often, when the violent vomiting and retching of the first stage had ceased, the stomach seemed to lose all nervous power, and become as it were paralyzed. Nourishment, medicine, and the most powerful stimuli were retained in any quantity, but produced no perceptible effect, the vital energies sinking rapidly, coma supervening, or a convulsive struggle, most painful to witness, closed the distressing scene.

The symptoms of the last stage were not, however, in every instance alike. Sometimes slight oozing of blood from the gums or mucous membrane of the nostrils was the first intimation of the patient's certain fate; the discharge rapidly augmenting in quantity, attended or not with black vomit, the strength quickly failing, cold clammy perspirations breaking forth, cold extremities, hiccup, deadly paleness of the countenance, delirium, and death. In other instances, a mouthful of black fluid coming from the stomach with scarcely any effort was the first symptom of the accession of the last stage; or the patient, while lying at ease, and thinking all danger at an end, would suddenly spring from his bed, and eject the dark-coloured contents of the stomach to a considerable distance, and with loud noise,—the black vomit continuing with dreadful retching until he sank into a state of insensibility, or death released him from his sufferings. With those highly predisposed to be affected by the morbid influences which gave rise to the disease, the shock was so sudden and overpowering that reaction was imperfectly, if ever established,—the nervous and vascular systems being at once overcome by the virulence of the poison. This most malignant form of the fever was common amongst the troops. It was no unfrequent occurrence for a soldier while on guard to be struck as if by lightning, stagger for a few paces, and be conveyed to hospital by his comrades, with extreme prostration of strength, burning skin, quick and feeble pulse, or a weak and slow pulse, with the surface at the natural temperature or very little above, the patient never rallying from this state of extreme depression,—black vomit, delirium, and yellow surface soon making their appearance, and death taking place on the third, fourth, or even as early as the second day.

Some of those leading and characteristic symptoms which distinguished the disease from the ordinary fevers of the country were present in every case, although it did not always present the same form, or even exactly the same course,—their variations, no doubt, depending upon differences of habits and constitution, or from the causes producing the disease acting with greater or less intensity, according to the susceptibility of the individual. The bilious remittent of the country is seldom so sudden in its attack, and is usually ushered in by chills or rigors, and marked throughout its course by distinct remissions and exacerbations; but in this disease it rarely happened that any sensation of cold was experienced either at the commencement of the attack or subsequently, and no remission was observed in any case until that period when all pain and febrile excitement subsided. This state, however, was never followed by an exacerbation, but seemed to proceed rather from loss of excitability and exhaustion of the vital energies, than from an effort of nature to throw off the disease.

Yellowness of the surface was invariably present, appearing on the second, third, or fourth day, as the disease was more or less rapid in its progress. A slightly yellowish tinge of the conjunctiva was first perceived; then the neck, shoulders, and anterior part of the thorax became of a dirty yellowish colour, with here and there dark irregularly-shaped blotches and spots. The yellow hue soon extended over the body, but in general continued deepest on the neck, shoulders, and breast,—these parts and the scrotum, immediately after the extinction of life, assuming a greenish-coloured and livid appearance, while the yellow tinge over the whole body was deepened.

Black vomit was not so constant an attendant of the disease as the yellowness of surface; but this discharge from the stomach took place in a majority of the fatal cases. On examination after death, when black vomit had not occurred, the stomach was always found to contain that fluid, and in all probability, in most of those cases, if not all, that ended very rapidly with but little gastric disturbance, dissection would have revealed the presence of black vomit in the stomach. This deadly symptom usually occurred on the third or fourth, sometimes on the second day; but at whatever period it occurred the patient's fate was sealed,—no instance of recovery taking place afterwards. When the fluid which had been vomited was allowed to rest in the vessel for some time, part of it settled to the bottom, and bore an exact resemblance to coffee-grounds, with which it has so often been compared. Numerous dark-coloured flocculi were seen swimming in the fluid which had been poured off, and adhering to the sides of the vessel in which it was examined. The black vomit, when it came in contact with the patient's linen or sheets, left a dark indelible stain.

In the common remittent of the island, yellowness of skin not unfrequently takes place, but is unaccompanied with that peculiar lividity of the neck, shoulders, and breast, which has been already noticed as frequent in the distemper. Black vomit, on the contrary, happens very rarely. I have never witnessed any thing resembling it but in one instance, and then the matter ejected was merely of a slightly brownish colour. Exudation of blood from the mucous membrane of the mouth and nostrils, increased by the slightest pressure or friction, was a very common symptom, and often announced the accession of the last stage, the patient's strength being rapidly reduced, and the fatal event accelerated by the great loss of blood from this cause.

Such was the case with Lieutenant Mould of the Engineers, whom I visited with the late Dr Hopkins, 74th Regiment. The discharge came on unexpectedly in the middle of the night, when an apparent amendment had taken place, and the blood flowed from the mouth and nostrils almost in a stream. The intellectual functions previous to this time had not been disturbed, although extreme dread of the result (evidently a symptom of the disease) had been present from the commencement; but the discharge of blood was soon followed by great debility, and delirium of the character peculiar to the fever. He could with difficulty be restrained from leaving his bed and walking about the room, or quitting it if left for a moment alone. His friends he recognized, and his reply invariably to any inquiry how he felt, was, that he had no pain and was getting better, and, after answering one or two questions rationally, broke out into loud lamentations at having a quarrel with the police, and being unable to find securities to rescue him from confinement. He peremptorily refused to take either food or medicine, stating that he had taken two solemn oaths not to touch either the one or the other, and if still further urged, reasoned on the impropriety of compelling him to violate his oath. He sank into a state of exhaustion, and died without having any convulsion, which was generally the case after much loss of blood in this manner, or when taken from the arm. I mention this case amongst many others, principally to give you some idea of the nature of the delirium.

I also visited with Dr Hopkins, Lieutenant O'Brien, 74th, a very fine young officer, who was cut off within a few days. I saw him just at the commencement of the last stage. He was sitting up in bed eating soup with great avidity. The pulse was natural, the skin cool and moist, and the tongue slightly coated. The stage of excitement had been by no means severe. He told me he had had a severe attack, but was happy to say that he was now recovering, and only wanted a little strength: and really such an opinion might have been formed by any one who had not previously seen the disease; but occasional twitching of the muscles of the face, a peculiar smile on the countenance, with at the same time a strange look of anxiety, but too surely indicated the fatal nature of the malady. The usual cerebral and nervous symptoms set in with delirium, and he died in violent convulsions.

In almost every instance when delirium ensued, some strange hallucination took possession of the mind. The patient reasoned with perfect accuracy from his false mental impressions, which were accompanied by the corresponding moral emotions; this state being attended with constant restlessness and a desire to leave the apartment;—or the patient talked incessantly of his usual occupations or pleasures, and often persisted in obstinately refusing to take either medicine or nourishment. The intellectual faculties in the early part of the attack were frequently in a state of high excitement, but without any aberration being manifested. The patient was exceedingly watchful, and listened with a painful and anxious attention to the remarks made by his friends, or endeavoured to hear conversation at a distance, in order to ascertain the opinion of others regarding his illness; every word, every movement of his medical attendant was carefully noticed, and questions put with the utmost art to elicit from him the nature of his complaint; or if danger existed, though reluctant at first to believe that he was attacked by the prevailing epidemic, as soon as this conviction was fixed itself in the mind, he gave way to the greatest despondency and alarm. This state of the intellectual faculties, even before the occurrence of actual delirium, frequently, as the disease advanced, gave way to one of utter indifference, or to a confident hope of recovering where the symptoms were evidently mortal. The same feeling of apathy and stupid insensibility to danger or any external impression was sometimes present in the most malignant varieties from the commencement, the sensorial functions being at once oppressed and overpowered by the intense operation of the morbid influences on a highly susceptible frame. The sinking of the pulse in the last stage, or the languid state of the circulation throughout the course of the attack, was very remarkable, the pulse under the fingers feeling laboured as if the heart and arterial system were paralysed by the poison in the blood, and hardly possessed sufficient power to urge on the sluggish current; nor could the state of the pulse at any time be considered as a sure indication of the intensity of the disease, or the existence of local inflammatory action. A pustular eruption, closely resembling small pox, breaking out over the whole body, was sometimes observed, which always seemed to be critical, as a favourable issue might then be confidently expected. Those who recovered were left in so debilitated a state when the disease subsided, that the period of convalescence was rendered extremely tedious, and amongst the troops there were several instances of a second attack after complete recovery from the first, these almost always ending fatally. Women were subject to frequent hysterical attacks while convalescent,—these recurring at intervals for many weeks, with much general debility and excitement of the nervous system.

Treatment.—It was soon discovered after the occurrence of several cases, that the usual mode of treating fevers by sanguineous depletion, (so generally necessary with Europeans when attacked with fever on their arrival, or after a short residence,) was not only inefficacious but often highly injurious. Although some few instances of recovery did take place after blood-letting, yet, as a general plan of treatment, the effect seemed rather to be an acceleration of the fatal event. Where, from the very onset of the disease, the pulse was feeble, and the prostration of strength extreme, the abstraction of blood was clearly contraindicated; but, on the other hand, when the patient was young and robust, the pulse strong, the skin burning hot, and constant gastric irritation, it would at first sight seem evident, that a prompt and decisive use of the lancet was urgently demanded; and yet, when depletion was carried to its fullest extent, the only good effect produced was but a temporary alleviation of the symptoms. When the blood was allowed to flow till faintness was experienced, or actual syncope supervened, the patient on recovering expressed himself greatly relieved; the violent headach, pains in the back, and lower extremities were removed, and the skin became cool and moist if previously hot and dry. This short respite from pain, and apparently favourable change, unhappily lasted but a very short time, giving place, after one or two hours had elapsed, to a renewal of all the symptoms, perhaps in an aggravated form. If the vein was again opened, the same result followed as from the first bleeding; and to whatever extent the abstraction of blood might be carried, or, however often repeated, no permanent impression was made upon the disease, but the stage of collapse was hastened, and the strength being much impaired by the loss of blood, rapid sinking was in general the consequence. In some instances where blood was taken from the arm, the violent headach and pain in the loins never returned or only partially; but this seemingly beneficial effect was far from preventing the accession of the last stage, or mitigating the malignant symptoms.

Much reliance has been placed on the specific effects of mercury in the cure of fevers of a similar type, by some who have written on the subject; and this mode of treatment was at first steadily pursued, but after many trials, was followed only with disappointment. Calomel was administered after blood-letting in large and frequently repeated doses, with the view of bringing the system under its influence as speedily as possible; but the difficulty of effecting this end appeared to be in the ratio of the severity of the disease. The more violent and dangerous the attack, and the more malignant the symptoms, the less probability there was of the calomel exerting its specific action; but even when this object was attained, the patient could never be pronounced absolutely safe, in as much as cases terminated fatally when calomel had been given in large quantities, and the system was decidedly under its influence. The mere circumstance of recovery taking place in some instances after salivation had ensued, does not prove that the disease was overcome, and life saved in consequence of the mercurial action being established. Such cases, in all likelihood, would have done well if calomel had not been administered, or at least not in order to effect salivation. This was sufficiently demonstrated when no calomel was used in the treatment, or when it was given only as a purgative. Administered with this intention at the commencement, and afterwards continued in small doses, aided by the action of other purgative medicines, it was found extremely useful in removing from the system accumulations of morbid biliary and intestinal secretions, and in relieving local congestions, as well as altering the state of the secretions and execretions; but even when the much desired object of salivation was produced by pouring calomel into the system in enormous doses, recovery, if it did take place, was much protracted, and the most intolerable sufferings inflicted upon the patient. In the more malignant cases, the only approach to salivation was swelling and soreness of the gums, tongue, and throat, with a decided increase of the tendency to hemorrhage from the mucous surfaces.

The necessity of free purging, particularly at the commencement of the attack, was indicated by the ill-conditioned, offensive, and dark-coloured evacuations, as already mentioned. For this purpose calomel was used, combined occasionally with croton oil or other purgatives, and followed by the infusion of senna with sulphate of magnesia, when this draught remained on the stomach, as the torpid state of the intestinal canal often resisted the stimulating action of the most powerful cathartics frequently repeated. When the strength permitted, a free discharge was kept up from the bowels by the exhibition of small doses of calomel alternated with Seidlitz powders, or the black draught assisted by enemata; any appearance of healthy bile being observed in the evacuations was considered very favourable, the liver during the attack being in so inactive a state, that its secreting functions for the time seemed almost suspended, or very much disordered.

When the skin was hot and dry, and symptoms of much febrile action were present, the *Pulv. Jacob. Verus* was given, alone or conjoined with calomel, and saline diaphoretics to induce a moist state of the surface and lower the febrile excitement. A mixture of *Liq. Ammon. Acet. Nit. Potass. Spirit. ether. Nit.*, &c. was of advantage, as well by acting upon the skin, as increasing the secretion from the kidneys, which in general was very scanty and high-coloured. The warm bath was sometimes ordered according to symptoms, and occasionally relieved the excessive aching pains of the back and lower extremities, always much complained of by the patient.

The headach and other symptoms of affection of the brain and membranes were treated by the removal of the hair and the constant application of cold when the heat was much increased, with the cold affusion over the head, which was so grateful to the patient's feelings, that a frequent repetition of it was often requested. Cold sponging over the whole surface was useful in reducing the extreme heat, topical blood-letting was had recourse to when the strength would permit, and blisters were applied to the nape of the neck, and sometimes on the head if the patient was comatose, and the heat of head not above the natural standard.

The symptoms of extreme gastric irritation, which frequently existed from the very commencement, required the use of opiates before any other medicine could be retained; but the irritability of the stomach was sometimes so intractable as to bid defiance to opiates in all forms, counter-irritation by sinapisms, turpentine fomentations, blisters, &c. and indeed, every available means that could be resorted to, to check this dangerous symptom; and the retching and vomiting continuing unabated till the nervous energy of the viscus seemed utterly exhausted, and the organ was rendered incapable of being acted upon by the most powerful stimuli, though then retained without any difficulty.

There is perhaps no therapeutical agent so valuable in the treatment of tropical fevers as the sulphate of quinine; but in order that this medicine may exert its powerful febrifuge properties, it is necessary that it should be exhibited during a remission; and in the fevers of this country, as they usually occur even when they run their course with great rapidity, a slight abatement of the symptoms at particular times, if not a distinct remission, will, in general, be detected if the case be carefully watched; and however obscure, or of however short duration this period may be, if the sulphate of quinine be administered in doses as large as the system will tolerate, the ensuing exacerbation is rendered milder, and the succeeding remission more distinct; and, by continuing the quinine during each remission, the disease is at length overcome, always supposing that the other necessary means of treatment have been adopted previous to and during its administration. But in the fever now under consideration, while the first stage lasted, no opportunity was afforded of exhibiting quinine,—even an imperfect remission rarely if ever occurring; and when the febrile symptoms had subsided, and the stage of collapse came on, if introduced into the stomach in the largest doses, it was found to be completely inert, or did not seem to have an appreciable influence on the system; and, moreover, it was equally inefficacious in arresting the progress of the malady, if given at the commencement of those cases which were accompanied with extreme debility and vital depression, and where its stimulating action was less likely to be injurious.

When the symptoms of impaired organic sensibility began to make their appearance, and the subsidence of the stage of excitement and the accession of the last stage, or that of depression, was denoted by the sinking of the pulse, cold extremities, &c., the further exhibition of medicine was of little or no avail. The only chance left for the patient was to support the vital powers, and excite the nervous system, by giving stimulants in no ordinary doses; the application of sinapisms, blisters, &c. to the extremities, or constant friction with hot flannel, carefully keeping up the general heat of the body. By adopting these measures, the lives of several persons were preserved, who must inevitably have perished within a very short time if they had been left to themselves, or stimulants had not been given in sufficiently large doses; but the closest attention to the symptoms, and the most unremitting regularity in the administration of food and stimuli were absolutely required to give the patient a chance; the neglect of even a few hours allowing the vital powers to sink irrecoverably.

Amongst the various stimulating substances which were had recourse to, few were found to answer so well as champagne,—its exciting action being more diffusive and rapid than other wines, while it was more likely to sit on the stomach. If any irritability of that organ remained, a greater or less quantity of this wine, sometimes as much as half a tumblerful, was given every hour or half hour, according to circumstances, alternated with farinaceous food, containing brandy; and, in some instances, the immense quantity of stimuli taken into the stomach with merely the effect of warding off the impending danger of immediate sinking, was truly surprising. Indeed, the circumstance most to be dreaded at this period was the nervous power of the stomach being so completely lost as to be totally beyond the influence of stimuli. If the cold clammy feel of the body gave way to a healthy glow diffused over the whole surface, and the pulse rose in strength and quickness of beat, the best hopes might be entertained of the patient's recovery. The strictest care was, however, necessary; for several days, the symptoms of sinking sometimes returning when not expected, demanding an immediate recourse to the same mode of treatment as previously employed.

In the case of a lady, the wife of an officer of the 74th, whom I visited in consultation with Dr Hopkins, stimulants in large quantities were required for several days. If discontinued only for a few hours sinking of the pulse and cold extremities was the consequence. A dozen bottles of champagne, besides other stimulants, were used within a very few days, and merely with the effect of keeping up the vital energies; and in another instance of a Methodist clergyman, who had previously been accustomed to drink only water, the same treatment in the last stage evidently saved life. Even after bleeding from the gums had appeared, the effects of the champagne he described as being so soothing that he invariably asked for it himself when he felt its stimulating action wearing off, and the feeling of sinking returning.

In those cases in which black vomit supervened, or the train of cerebral and nervous symptoms already described ensued, this method of treatment, with every other, was alike inefficacious, death being the certain result. Recovery was even rare, when the slightest exudation of blood from the mouth or nostrils took place. In the great majority of the cases of recovery, none of the malignant symptoms made their appearance, the stage of excitement gradually subsiding without the supervention of the stage of collapse; but so treacherous and uncertain was the disease, that, under the most favourable circumstances, no decided prognosis could be given till several days of steady and progressive improvement had elapsed. A trial was made of the saline treatment recommended by Dr Stevens in the malignant fevers of the West Indies, founded on his hypothesis of the diseased state of the fluids. The fact of the blood being in a highly diseased condition was sufficiently obvious; but unhappily the salutary change said to be effected by the action of the neutral non-purgative salts did not seem to take place, as may be inferred from the malignant symptoms continuing unabated. Notwithstanding the exhibition of the salts in large doses, and the administration of the carbonate of soda, muriate of soda, chloride of soda, nitrate of potass, &c. variously combined; yet in no instance in which they were prescribed could it be said that they produced any marked effects, either in preventing the occurrence of malignant symptoms, or removing them after they had made their appearance.

It will be seen from the foregoing statements that the indications of cure were, 1*st*, To allay irritability of stomach if it existed; 2*d*, To remove local congestions or subdue inflammatory action; 3*d*, To improve the state of the secretions and excretions; and finally, To support the sinking powers of life in the last stage. To reach the cause of disease, and at once cut short the attack, or destroy the poison in the system by remedial agents, was a hopeless attempt. The treatment was therefore necessarily confined to watching and controlling the symptoms as they arose, and endeavouring to conduct the case to a favourable termination. The only conclusion, indeed, which could be formed, was, that over the malignant form of the fever medicine had no power, while, on the contrary, in the milder cases, where there was less susceptibility, and the poison acted with diminished virulence, medical treatment was of the utmost service.

Morbid Anatomy.—The great importance of pathological inquiry in throwing light on the origin and nature of disease, and, consequently, leading to more rational and successful modes of treatment, cannot be questioned; but in the fever now under consideration, but little information was acquired from inspections after death, with regard to the primary cause of those terrible and fatal symptoms characterizing the disease, and which so quickly ended in the destruction of life. A remarkable uniformity was observed in the morbid appearances which presented themselves on dissection; and this remark bears a particular application to the stomach, which suffered in a greater degree, and more constantly than any other organ. So invariably was congestion, inflammation, or disorganization found in every case which was examined, that a diseased state of this organ seemed to arise as a necessary consequence, or exist as an essential part of the fever. When the abdomen was opened, the external surface of the stomach seldom offered anything worthy of notice, with the exception of the large veins being occasionally congested. When cut open, a viscid black fluid, sometimes in considerable quantity, was always discovered; and on this being removed, the attention was at once attracted by the vermicular appearance of the surface, the villous coat being corrugated and thrown into numerous folds, and inflamed or congested in a greater or less degree, or changed in structure according to the violence of the symptoms, and the rapidity with which the case terminated. If death took place on the second, third, or fourth day, the increased vascularity was noticed in bright-red, or dark, dusky patches, confined, perhaps, to only one portion of the stomach, generally towards the pyloric orifice. In other instances the inflammatory action extended in patches over the greater part of the mucous membrane; and if the case was protracted to the sixth or seventh day, or later, the whole surface was usually involved, the inflammation having run on to disorganization of the mucous coat, which was softened, and frequently thickened with the substance of the viscus generally, and presented a leaden-coloured, dark greenish, or mottled appearance, with here and there spots of vascularity or dusky patches. The fluid found in the stomach was precisely of the same character as that which was vomited during life. When washed carefully from the mucous surface, many black patches were sometimes left adhering, which it was found impossible to remove, being as it were engrained in the substance of the membrane.

Of the various opinions that have been advanced respecting the origin and nature of the matter of the black vomit, the most probable may be, that it consists of blood which has been exhaled from the congested capillaries or pores of the stomach, becoming changed by remaining in that organ for some time,—the exudation being favoured by the morbid condition of the vital fluids, and its loss of cohesion, as well as the relaxed state of the capillary vessels, and probable alteration in texture.

The colour of the liver was in almost every instance changed to a light yellow or gamboge hue; but when cut into the gland exhibited no alteration of structure. The gall-bladder was in general flaccid, but sometimes contained a quantity of bile, of thinner consistence, and lighter colour than natural.

When the head was examined, vascularity of the membranes and substance of the brain was observed, with effusion within the ventricles and at the base.

The organs within the chest were always healthy, unless where previous disease existed.

Pathological Deductions.—The morbid appearances which were displayed on dissection, in general, were far from corresponding with the nature and violence of the symptoms, or the suddenness of the fatal termination. A simply vascular state of the brain and its membranes, conjoined with inflammatory action of part of the mucous tunic of the stomach, without structural lesion, was by no means sufficient to account for the occurrence of a peculiar train of symptoms, and death, after an illness of only two, three, or four days. Moreover, it is to be supposed that, if inflammation of the stomach or brain constituted the disease, or a principal part of it, the treatment usually adopted to subdue inflammatory affections would have been attended with favourable results. Such, however, was far from being the case. Depletion did not arrest the course of the fever, or check the progress of the inflammatory action, which seemed to be peculiar to the disease, and run on to disorganization under all plans of treatment, provided the patient survived for a sufficient number of days; and then it might with truth be said, that death arose from organic lesion; but this occurred as a consequence, not as the original cause. It may no doubt be impossible to arrive at a knowledge of the *primum mobile* in the series of morbid phenomena; but on considering all the circumstances connected with the disease, the conclusion that forced itself upon the mind was, that the *origo mali*, instead of having its seat in the solids, principally resided in the circulating fluids. The highly morbid condition in the blood as a primary change in the system was very remarkable. When venesection was practised, the blood, as it flowed from the arm, presented a singularly mixed appearance, as if the vein had contained two differently coloured fluids, the one bright-red, the other almost black; and on examining the blood an hour or two after being withdrawn from the system, the usual separation into serum and crassamentum was found to have taken place very imperfectly. In the centre was observed a loose coagulum of small size, and easily broken down, the surface of which was streaked with green and yellow, the serum being in larger quantity than natural, and intimately mixed with the colouring matter of the blood. These changes in the vital fluid were invariably noticed to a greater or less extent in every instance when blood-letting was had recourse to, which was always at the very onset of the attack; and as the disease advanced to the last stage, the blood was so altered and broken down, as to escape from the capillary vessels of all the mucous surfaces, and from the stomach in the form of black vomit, if such be the origin of the dark fluid ejected from that organ. The great prostration of strength and peculiar cerebral and nervous symptoms may have been produced by the direct impression of the morbid influences on the nervous system; but, at the same time, it can scarcely be supposed that the blood, evidently contaminated, and much changed from its healthy condition, could continue to circulate through the system, without giving rise to great functional disorder or consequent organic destruction, as well of the brain as of other vital organs. It may be observed with reference to the treatment, that, if the disease consisted in a great measure in some morbid changes in the fluids, the mere abstraction of a certain quantity of blood from the system, would have very little if any effect in restoring the mass to a healthy state. Should a more successful mode of treating the malignant form of this fever be discovered, it will not be the result of merely directing the attention to the removal of symptoms; but in all likelihood the effect of such remedial agents as will correct the morbid state of the circulating fluids.

Etiology.—No satisfactory decision could be formed with regard to the causes which gave rise to this deadly visitation, or the intermittent which preceded it. Although the season had been unusually wet from January of the same year, yet the apparent meteorological phenomena were not such as could account for the appearance of fever of a particular character, at a period of the year when the country is generally healthy. The range of the thermometer for several months previous to the breaking out of the fever, and during its continuance, differed but little from the average temperature. The quantity of rain that fell was greater than is generally expected in the early part of the year, and it occasionally happened that the weather was calm and sultry, the feeling of heat and oppression being much more intense than was indicated by the height of the mercury in the thermometer. But similar irregularities of season often take place without being followed by disease, or the health of the community being in any unusual degree affected. It may be contended that the origin of the fever is simply to be attributed to the usual causes of disease in a tropical climate, favoured by a moist atmosphere, acting with more than common virulence on certain constitutions; but no disease having been known in the island of a similar nature and so fatal in its effects since the year 1817–21, the existence of some new cause or causes, whether terrestrial or atmospheric, differing from the usual endemic influences, or acting in conjunction with them, is naturally to be inferred; for the latter are constantly in operation, and could not alone have produced a fever of so uncommon a character, and of a type so rarely witnessed in the island. Dr Fergusson, in his valuable observations on yellow fever, states that it is the product of unhealthy locality and uncommon drought of season. That the disease is the product of only certain localities may be considered as an established fact; but his assertion in regard to drought of season will not hold good as a general rule. Variations of season do not, indeed, appear to have much influence in producing yellow fever; for it will break out and extend its ravages when the atmosphere is charged with moisture, or where perhaps there is no unusual change in the weather, as well as after long-continued drought. In short, it seems just as difficult to account for the appearance of yellow fever as to discover the primary causes of cholera, typhus, or any other epidemic. But, from whatever sources the disease may spring, it is certain that they invariably originate at or near the level of the sea, and that their influence is limited to a certain elevation. In the island of Dominica no case occurred, but in the town of Roseau and its neighbourhood, and in the French island of Guadaloupe, when the disease raged at the same time as in Dominica, and with equally fatal results, the towns of Point a Pitre, and Basse Terre close on the sea shore only suffered. The surgeons of the hospital of Basse Terre informed me, that some instances came under their notice of planters who had come to town for the transaction of business, and who had remained for a very short time, being attacked on their return to the country and dying with black vomit; but from these points the disease never extended, evidently showing that the poison breathed in the tainted atmosphere, and afterwards manifesting its effects on the system, did not possess the power of propagating itself in such situations.

The contagious or non-contagious nature of so formidable a disease is a subject of much interest and importance,—the opinions of medical men on this point being very conflicting, and evils of great magnitude having arisen from the enactment of quarantine laws, the strict observance of which has been as arbitrary and cruel in its consequences, as hitherto totally useless in preventing the spread of this deadly fever. Without denying the possibility of the disease being communicable from one person to another under certain circumstances, as when a number of patients are crowded together in an ill-ventilated apartment, yet, having closely watched the progress of the fever from its first outbreak in this island to its final cessation, the only opinion that could be formed by an unprejudiced observer was, that it originated and extended itself from causes altogether independent of contagion. The first person attacked with fever attended by unusual symptoms, was a young man from Europe, a clerk in one of the stores in town, who had scarcely been twelve months in the country. He was taken ill on April 7th, and died on the 15th. It may be well to mention, that no vessel had arrived from any infected port, nor did any circumstance take place that could for a moment excite suspicion of the introduction of contagion into the island. The second individual who was seized was a middle-aged planter, (one of the few Creoles attacked,) who had removed to town about a week before from a healthy situation on the windward side of the island, and whose habits had been for some time intemperate. The fever commenced with him on April 23d, and ended fatally on the 7th day. On May 5th, one of the stipendiary magistrates was attacked, and died on the morning of the fourth day. These were the three first cases that occurred; and it did not admit of a doubt, that they must have arisen from causes altogether unconnected with contagion, as no communication whatever could have existed between any of the parties. The disease then made its appearance on board a brig that had recently arrived from London, the crew having been previously healthy. On May 13th, one of the sailors was attacked, and died on the fourth day with black vomit. Two others were soon after affected, and both were conveyed on shore and lodged in a house very nearly in the centre of the town. After lingering for some days, they both died, one with black vomit, the other with a similar discharge *per anum*. In this instance a striking proof was afforded, that the fever did not propagate itself by contagion. In the neighbourhood of the house where the sailors lay, several families of white persons resided; one house in particular was situated immediately to leeward, and so near, that the cries of the unfortunate men were extremely distressing, yet not a single case afterwards occurred in this part of the town; and although during their illness they were visited by several persons, both European and Creole, not one of those who saw them was affected.

On the 9th May, a soldier of the detachment of artillery stationed at Fort Youag, in the town of Roseau, was attacked, and within a few weeks more than half their number was swept off, nine dying out of fifteen, the strength of the detachment; indeed, almost every one perished who was attacked at this period, as well of the civilians as of the military; but following the law which is generally observed in regard to epidemics, the disease as it extended became less virulent, and the mortality decreased. The detachment of artillery was removed on the 23d May to Morne Bruce, and shortly after the soldiers of the 74th garrisoned there became affected. The artillery were lodged in a barrack-room with part of the 74th; but instead of the disease appearing amongst the men with whom they were necessarily in constant intercourse, all the first cases came from a different barrack-room, where another company of the 74th was stationed. As compared with the garrison, the number of civilians affected was small; but the fever first breaking out amongst the latter, the mortality was consequently much greater in proportion,—more than one-half dying of all who were affected.

The last case in the town of Roseau was the wife of a Methodist clergyman. She died on the 23d June, and from that date the disease ceased to exist amongst the civilians; but in the garrison it continued to prevail for several weeks after, though less fatal than at the commencement.

Dr Macann, Staff-surgeon, gave me a statement of the number attacked in the garrison and the deaths. The strength of the garrison in May was 131 men; 100 men were attacked, of whom 35 died; 6 officers were attacked, of whom 3 died.

There were eight deaths in the town of Roseau, and, considering how small the European population is, the number is certainly great.

There is one circumstance that I have omitted to mention, that I saw a black girl in the last stage of the fever with real black vomit. The symptoms for the first two days had been very mild, and did not excite alarm. When I visited her, she was comatose, and had frequent attacks of vomiting, the fluid having the usual dark coffee-grounds appearance. She died soon after.

ART. VI.—*Four Cases of Aneurism of the Arch of the Aorta, and a case of Diaphragmatic Hernia.*[*] By JOHN REID, M. D., F. R. C. P. E., Lecturer on Physiology, President of the Anatomical Society, &c.

I HAVE had occasion, within the last eighteen months, to inspect in the Royal Infirmary the bodies of nine individuals who died from aneurism within the thorax, and I have drawn up accounts of the morbid appearances observed. Four of these cases, from the rarity of their termination, appear to me to be of sufficient interest to be considered contributions to the morbid anatomy of aneurism of the arch of the aorta, and will be found in the following pages nearly in the same form, with the exception of a few verbal corrections, as I have entered them in the Registers of Dissections kept in the Infirmary. Of the five cases not detailed here, in one, the aneurism was placed upon the middle part of the thoracic portion of the aorta, and burst into the œsophagus; a second was placed upon the lower part of the thoracic and upper part of the abdominal aorta, and burst into the left cavity of the pleura; in a third, the aneurism was placed upon the transverse portion of the arch of the aorta, had destroyed by its pressure the continuity of the left recurrent nerve, and produced sudden suffocation by its effects upon the movements of the muscles attached to the arytenoid cartilages of the larynx; in a fourth, the aneurism occupied the upper part of the descending portion of the arch, and proved fatal by its pressure upon the trachea and left recurrent nerve; in the fifth, the aneurism was placed upon the trunk of the *arteria innominata* at its origin, had acquired an immense size, extending upwards as high as the thyroid cartilage of the larynx, and produced absorption of the upper part of the sternum, and of the inner end of the right clavicle. The skin had become livid at two places over the surface of the tumour, the blood had even begun to ooze out, but he died before any external rupture had occurred.

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[*] Published by permission of the Managers of the Royal Infirmary, and of the Physicians under whose charge the patients were placed.

Case I.—*Aneurism of the Aorta opening into the Right Auricle.*—E. W. aged 35, a tinsmith, and addicted to the use of ardent spirits, was admitted, 5th October 1839, under the charge of Dr Peebles. Stated that he had been long subject to fits of palpitation, but dates his present complaints from an uneasy sensation, like something giving way, which he felt in his chest while raising a heavy weight about three weeks before admission. On admission, the arms and chest, but more especially the face and neck, were of a livid colour, very much swollen, and pitted on pressure, and the vessels of the conjunctiva were congested with blood. The lower parts of the body were not œdematous. He had much dyspnœa, and some cough. Strong impulse of heart, and its apex was felt lower than usual; and a double bellows sound was very audible over the cardiac and sternal regions, particularly over the upper part of the latter. The bruit accompanying the first sound of the heart was more prolonged; the bruit accompanying the second sound was sharper and shorter. The chest could not be satisfactorily percussed from the great œdema; but there was evident extended dulness over the cardiac region, and over the upper part of the sternum. The respiratory murmur was very loud at the upper angle of the scapula. He had some difficulty in deglutition; pulse 90, with a distinct interval between the impulse felt at the chest, and the beat at the wrist; urine scanty and turbid, not coagulable by heat or nitric acid. Had been previously bled, cupped, and had used diuretics and drastic purgatives. Both previous to and after his admission, his intellectual faculties were confused, and his speech was ultimately impaired. It appears, from information furnished by the medical gentleman who attended him previous to his admission, that the lividity, œdema of upper part of body, and confusion of the intellectual faculties, occurred about the same time. On his admission the diagnosis was hypertrophy of the left side of heart, and aneurism of the aorta, and he was treated by drastic purgatives and digitalis. The œdema and lividity of upper part of body continued, and the dyspnœa became more urgent, and he was unable to assume the horizontal posture for any length of time. No œdema of lower part of body presented itself, except some slight swelling of scrotum. Some dark, circumscribed livid spots appeared on chest. He had delirium at night, and his eyes were bloodshot. Pulse ranged from 90 to 100. He died suddenly on the morning of the 13th.

Sectio Cadaveris, 16*th*.—The difficulty of prevailing upon the friends to permit an inspection of the body will explain its delay. Forty-four ounces of serum were effused into the cavity of the right pleura, and thirty-six into the left. Lungs small, compressed by the serous effusion into the chest. They contained a considerable quantity of blood and frothy serum, but were everywhere spongy. The inner surfaces of the serous part of the pericardium were universally and firmly adherent, and the heart was decidedly larger than usual. The left ventricle was evidently somewhat dilated, while the other cavities of the heart were of their usual size. The walls of all the cavities of the heart were considerably thickened, as will appear from the following measurement. Thickest part of right auricle 4–24ths, and thickest part of left 5–24ths of an inch; thickest part of right ventricle, 9–24th, (measured where no *columnæ carneæ* were present;) thickest part of left ventricle, 18–24ths; thickness of middle part, 15–24ths; and of apex, 6–24ths. The walls of the heart were paler and more flabby than usual. The aortic and semilunar valves, and the other valves of the heart were healthy, and found adequate when tested by water. The aorta at its origin suddenly dilated, and formed an aneurismatic enlargement capable of easily containing the closed fist. This dilatation was confined to that part of the artery immediately above the aortic opening, termed the sinuses of Valsalva, and as the circumference was placed on a lower plane than the centre, the aortic opening, with its semilunar valves, was situated on the most elevated part of the floor of the aneurismatic swelling. The tendinous portions of the aortic opening were very much thickened, and somewhat elongated upwards; but the aortic orifice was not enlarged. The fibres of the middle coat of the artery which pass between the three projecting extremities of the tendinous festoons, and form the upper termination of the sinuses of Valsalva, were much elongated, and carried considerably upwards at the middle part, so that the upper boundary of the aneurism was bounded by three large segments of a circle, formed by these three bands of fibres. The ascending portion of the arch of the aorta suddenly resumed its original size, and there was a portion of the vessel 1 inch and 4–12ths in length, between the upper edge of the dilated part, and the origin of the *arteria innominata*, of its usual size and appearance, with the exception of being somewhat thickened and roughened on the inner surface. The aneurismatic dilatation chiefly projected backwards and to the right side, pressing upon the anterior edge of the *septum auricularum*, and the neighbouring parts of both auricles, and overlapping and pressing upon the anterior and left part of the right auricle, and stretching the termination of the descending cava over its outer surface. On examining the interior of the auricles and the aneurism, two oval openings, with defined and rounded margins, (one of which was 10–24ths of an inch in length, and 5–24ths in breadth; the other 9–24ths in length, and 5–24th in breadth,) were observed forming a free communication between the aneurism, the right auricle, and the termination of the superior cava. The cava itself was pervious, but must have been compressed by the aneurism when distended with blood. On the inner surface of the anterior wall of the left auricle, near the anterior edge of the septum, there was a dark projecting part about the size of the point of the finger, which, from the pressure of the aneurism upon it, and the thinning of the walls of the auricle at that part, would soon have given way, and have formed a communication between the left auricle and the aneurism. On examining the inner surface of the aneurism, it was observed that the dilated coats of the vessel were thin and very soft, that they were deficient at some points, and that the sac of the aneurism was there formed by the adherent pericardium, or by the outer surface of the walls of the auricles. The blood was fluid, and there were no fibrinous clots in the aneurism. Abdominal organs healthy. Brain not permitted to be examined.

The old and firm adhesions between the inner surfaces of the serous part of the pericardium satisfactorily explains the unusual size of the aneurism in this patient. It is well known that, when an aneurism forms upon an artery, the internal and middle coats in general soon give way, and the aneurismal sac is then formed by the surrounding cellular tissue. When an artery is surrounded by very little cellular tissue, as is the case with that portion of the aorta enclosed within the pericardium, and with the arteries within the cranium, aneurisms formed upon it seldom acquire a large size; and there can be no doubt, from the appearances observed on dissection in this patient, that the aneurism would have burst into the cavity of the pericardium, and have soon arrested the heart's action at some period previous to the time of his death, and probably before it had burst into the auricle, had it not been for the old adhesions between the inner surfaces of the serous part of the pericardium. The greater thinness of the middle coat, and the larger calibre of the artery at the sinuses of Valsalva, account, as we have elsewhere explained,* for the greater liability of that part of the vessel to be affected with aneurism.

The sensation of something giving way in the chest felt by the patient on lifting a heavy weight, and the train of symptoms which followed, may be referred to some sudden increase of the size of the aneurism; and it is probable that at this time also the aneurism burst into the right auricle. The compression of the *cava superior* at its termination satisfactorily explains some of the most striking symptoms of this case. It explains the great œdema and lividity of the upper part of the body, the congested state of the vessels of the conjunctiva; and, conjoined with the dyspnœa, will also account for the disturbance of the intellectual faculties. It also explains in a very satisfactory manner the effusion of serum into the chest, when none was effused into the abdomen; for as the *vena azygos*, which returns the blood from the inner surface of the parietes of the chest, enters the *cava superior* above the point compressed, the same impediment must have existed to the return of the blood from that vein, as from the other branches of the *cava superior*. If the compression of the *cava superior* had occurred in a more gradual manner, as probably took place in a case of complete obliteration of this vein, which we have elsewhere detailed,† it is possible that the collateral circulation with the *cava inferior* might have been established without any such derangement of the circulation of the upper part of the body having manifested itself. Though all cases of compression of the *cava superior* are not attended by the same effects upon the circulation, yet at the same time it must we think be admitted, that, if similar marked symptoms of retardation of the blood in the vessels of the head and superior extremities with œdema, and the effusion of fluid into both sides of the chest, while the lower parts of the body remained unaffected, were presenting themselves, we would be justified in predicting that the *cava superior* would be found compressed.

CASE II.—*Aneurism of the Aorta bursting into the Pulmonary Artery.*—J. H. aged 36, of intemperate habits, was admitted on the 22d of May 1839 into the Royal Infirmary, under the charge of Professor Alison. Stated that in January last he began to feel occasional palpitations with dyspnœa, and underwent some medical treatment without relief. About a fortnight before admission, œdema of feet had commenced, and had continued to increase. On admission, the lips and face were pale. Had severe cough and considerable dyspnœa, and much œdematous swelling of the feet and ankles; and also much enlargement of abdomen. There was considerable dulness on percussion over the cardiac region, and also over the lower part of the left scapula. The heart's action was irregular in force, and a bruit accompanied both sounds, but particularly the second, which was prolonged. The respiration was rather faint in the lower part of both sides of chest, and was accompanied with subcrepitating râle; pulse small and weak; has occasional vomiting and sense of constriction in the epigastric region; micturition scanty, and frequent; urine coagulable by heat and nitric acid; bowels costive. Took diuretics and antispasmodics without much relief to the symptoms. On the 5th June it is reported that he feels occasionally as if he were going to faint; and has sense of uneasiness in the epigastrium; urine from nineteen to twenty ounces daily. 19th, More dyspnœa last night; œdema of scrotum increased; cough continues; urine scanty. To take gtt. i. of croton oil, and two grains of hyoscyamus to be repeated. 24th, Has had drastic purgatives, (elaterine and gamboge), which produced several watery stools, which were followed by a considerable diminution of œdema of scrotum and legs. 25th, A short time after noon, the dyspnœa became suddenly much increased, the lips became livid, the pulse feeble, and he died during the night.

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* Article Heart, Cyclopædia of Anatomy and Physiology, Vol. ii.

† No. 122 of this Journal.

Sectio Cadaveris.—Eighteen ounces of serum in the cavity of the abdomen; fifty-two ounces in the two sides of chest; and eight ounces in the cavity of the pericardium; heart considerably increased in size; right side of heart full of blood, chiefly fluid; right auricle considerably distended, without diminution of the thickness of its walls; right ventricle rather larger than usual; its walls somewhat increased in thickness, and much firmer than usual; left ventricle considerably dilated, without any increased thickness of its walls; mitral valve healthy. Two of the semilunar valves were elongated, and when thrown inwards, projected downwards into the upper part of the ventricle, and thus lay on a lower plane than the third valve, rendering them inadequate when tested by water. On the posterior and left side of the aorta, immediately above the semilunar valve, there was an aneurismatic swelling about the size of an orange, which projected backwards, and pressed upon the left auricle; and also partly lay on the right side of the aorta. On slitting up the pulmonary artery, a ragged transverse fissure was observed in the coats of the pulmonary artery 1 inch and 3-10ths in length, and commencing $1\frac{1}{2}$ inch above the origin of the vessel from the right ventricle. This fissure formed a communication between the aneurismatic sac and the pulmonary artery. The coats of the aorta were thickened and irregular on the inner surface. Liver rather larger than usual, and granulated on the surface; and the cut surfaces presented a highly mottled appearance. The kidneys were slightly mottled by yellow deposit in the cortical portion; stomach much congested in the splenic extremity. Brain healthy.

From the appearance of the communication between the aneurism and the pulmonary artery in this case forming a narrow ragged fissure, it is probable that the pulmonary artery had given way a few hours before death; and at this time the dyspnœa had become suddenly increased, with augmented lividity of the face.

Case III.—*Aneurism of the Aorta communicating with the Pulmonary Artery.*—G. F. aged 60, was brought in a moribund state into the Clinical Ward under the charge of Professor Graham, and died shortly after admission. No accurate account of the previous history of this patient could be obtained; but it appears that he had been seen by a physician in his own house a month before he was brought to the infirmary; and he then evidently laboured under hypertrophy of the left side of heart, and had considerable dyspnœa.

Sectio Cadaveris 36 hours after death.—Some serous effusion in the cavity of the paricardium. The right side of heart was distended with clots of blood, chiefly decolorized. The cavity of the left ventricle was considerably enlarged, with hypertrophy of its walls, and its apex projected an inch at least beyond that of the right ventricle. The lips of the mitral valve contained some thickened and hard spots at their fixed margins; but they were not shortened, and the auriculo-ventriculo opening was not dilated. Several soft irregular warty excrescences adhered to part of the inner surface of the posterior and left semilunar aortic valves, and prevented their close approximation, though the valves themselves were not shortened. A few small warty excrescences were also attached to the aortic tendinous ring, immediately below the fixed margins of the semilunar valves. The ascending portion of the arch of the aorta was somewhat dilated, and presented numerous yellowish and slightly elevated spots on its inner surface. The part of the aorta from which the brachio-cephalic arteries arose, was nearly of its usual size, while it became suddenly dilated to about three times its usual calibre immediately beyond the origin of the left subclavian, and again assumed its natural size about an inch above the point where it passes behind the diaphragm. From the upper and right side of this dilated part of the descending portion of the arch, a small infundibuliform aneurismatic pouch, rather more than an inch in length, projected forwards and to the right side, and connected itself to the left branch of the pulmonary artery, about a quarter of an inch beyond the bifurcation of the pulmonary artery into its left and right branches, so as to form a communication between the upper part of the dilatation and the left pulmonary artery. This infundibuliform aneurismatic pouch, at the part where it communicated with the dilated portion of the aorta, would have contained the point of the thumb, while the part which opened into the left pulmonary artery was not larger than the carotid or subclavian. The orifice of the opening into the left pulmonary was somewhat rounded, but at the same time irregular and fringed at the edges. The inner surface of the pulmonary artery presented several yellow spots in the immediate neighbourhood of this opening; and there was a small number of similar spots, but more scattered, placed a little above the pulmonary semilunar valves. At the upper part of the dilated portion of the descending aorta, the coats of the vessels were but little altered from their healthy appearance; but there were several yellow and calcareous deposits on the inner surface of the middle part. The lower lobes of both lungs presented each a circumscribed dense portion somewhat less than a pigeon's egg, (pulmonary apoplexy:) they were of a dark-red colour, and one of them contained a little puriform matter in its centre. Another dense portion nearly of the same size as those just described was found in the upper lobe of left lung, and was of a light brownish yellow colour. The liver was very pale, and somewhat resembled the fatty liver in its appearance; slight yellow granular deposit in the cortical structure of the kidneys. The spleen was larger and considerably firmer than usual.

The communication between the aorta and pulmonary artery in this case, exactly occupied the position of the *ductus arteriosus* in the fœtus. We believe, however, that the communication did not arise from the *ductus arteriosus* continuing pervious, from the circumstance that there was an aneurismatic dilatation of the aorta present at the point of communication; and the opening into the pulmonary artery was irregular and ragged, and did not present the smooth and rounded orifice of one artery branching off from the trunk of another. It may be difficult to decide whether this communication was or was not formed by the *ductus arteriosus* opened up, and somewhat altered by the presence of an aneurismatic dilatation on the aorta; but there can be no doubt that it lay exactly in the position of the impervious cord left in the adult by the obliteration of that vessel.

The parts exhibiting the three aneurisms of the aorta, and the parts into which they burst, detailed in the previous cases, as well as an other case, which also occurred in the Infirmary, of an aneurism of the aorta communicating with the pulmonary artery by two pretty large openings, related by Dr Henderson in No. 127 of this Journal, are preserved in the University Anatomical Museum.

Case IV.—*Aneurism of the Aorta bursting externally.*—J. P. aged 31, a mason, of temperate habits, was admitted, 7th August 1839, under the charge of Dr Shortt. Stated that, about six years ago, he began to complain of pain behind the upper part of sternum; that about twelve months after this, a tumour about the size of a nut presented itself near the sternal end of right clavicle; and that he has been occasionally troubled with dyspnœa, but not with palpitation. On admission there was a pulsating tumour, rising and falling with the systole and diastole of the heart, placed at the junction of the right clavicle with the sternum. The tumour was of a pyriform shape, projected about three inches in front of the sternum, and was about three inches and a-half in circumference. There was a loud bruit heard over the tumour, and a bruit also accompanied the sounds of the heart. Impulse of the heart strong, and felt below the sixth rib; complained of some pain in the region of the tumour. Of an athletic form of body, and general health good. Pulse 72, full and throbbing; no dyspnœa when quiescent, and appetite good; was ordered to be bled, and to take digitalis and colchicum. The tumour continued to increase in circumference, and there projected from its anterior surface a smaller tumour, measuring about three inches in circumference, and was prolonged outwards two inches beyond the surface of the broader tumour placed below. The pulsation was less strongly felt in the projecting portion than in the broad part of the tumour, but the skin covering the apex of it became first livid, and then of a dark-colour, and presented the appearance of incipient sloughing. On the 3d of September some oozing of blood took place from the apex of the projecting part. On the following day about two ounces escaped; and on the afternoon of the 4th, a sudden rush of arterial blood took place when he was straining at stool, and he soon ceased to breathe. The heart continued to beat for a few minutes after the respiration had ceased, and about four pounds of blood (to judge by the eye) had escaped.

Sectio Cádaveris, 6th.—On opening the thorax, a large aneurismatic dilatation was found in the anterior mediastinum. This dilatation was formed by the aorta, and included all that part of the vessel placed between its origin from the heart, and where it lies on the fourth vertebra. The most dilated part was near the origin of the *arteria-innominata*, and would readly have contained two fists. The walls of this dilatation were every where formed by the coats of the artery, except at the part behind and to the right side of the sternum. The middle coat of the artery was much thickened, and contained several calcareous plates at different parts. There was a rounded opening in the walls of the sac, which passed partly through a notch in the upper and right side of the sternum, and partly through the interval between the sternum, first rib, and clavicle. This opening admitted the passage of three fingers, and communicated with the aneurismatic tumour, which had appeared externally. The walls of the external tumour were formed by the anterior surface of the sternum, which was bare and rough, by cellular tissue, and by the skin. A firm fibrinous and decolorized clot, about a quarter of an inch in thickness, occupied the apex of the external tumour, and by the edges of this the blood had escaped. The internal tumour was partly occupied by a large soft dark-coloured coagulum. The left ventricle of the heart was very considerably dilated and hypertrophied. The semilunar aortic valves were shortened, thickened along their margins, and were inadequate. Lungs contained some serum, and were not particularly pale, some coagulated blood in heart. Liver and intestines pale; kidneys slightly granular.

This aneurism, though large, produced no dyspnœa under moderate exertion, and no dysphagia, from the circumstance that it projected forwards and not backwards. It is much rarer for aneurisms of the aorta to burst externally than what we would at first imagine. Some of the most experienced practitioners in this city have not witnessed such a case.

Case V.—*Case of Diaphragmatic Hernia produced by a penetrating wound.*—W. R. aged 45, a shoemaker, was admitted, on the 13th September 1838, into the Infirmary, under the charge of Dr Shortt, about noon. He stated that he had been seized about 4 o'clock P.M. of the previous day with vomiting, succeeded by dyspnœa, and that the latter had continued to increase up to the time of his admission. He also stated, that for upwards of a year, he had been subject to occasional severe pain in the left hypochondriacal region, and also to cough without any expectoration. On admission he complained of great pain in the left hypochondrium, severe dyspnœa, with a depressed anxious expression of countenance; the pulse was intermittent, and so weak that it could not be reckoned. Extremities cold, and lips livid; percussion dull over the whole of the left side of the chest, and the respiratory murmur was there inaudible, while it was puerile on the right side. The sounds of the heart were only audible under the cartilages of the fourth, fifth, and sixth ribs on the right side. Had wine ordered, and sinapisms were applied to the chest and feet. Died in four hours after admission.*

Sectio Cadaveris, 16*th September*.—Heart healthy, but somewhat displaced towards the right side. Right lung sound. The left side of the chest contained more than six pounds of a reddish fluid, but there was no recent effused lymph on the pleura. The left lung was compressed towards the spine, and also towards the edge of the cordiform tendon of the diaphragm to which it adhered; and the left side of the diaphragm was pushed downwards into the abdomen. The lung itself was devoid of air. A dark soft mass was seen lying in the lower part of this side of chest, and was connected with the upper surface of the diaphragm. On examining the upper part of the abdomen, and the lower surface of the diaphragm, it was obvious that the dark mass observed in the chest was composed of a part of the transverse arch of the colon, and a considerable mass of the large omentum, which had passed through an opening with callous edges, in the diaphragm, and become strangulated. The parts were now carefully examined *in situ.* A cicatrix nearly half an inch in length was observed in the skin at the lower part of left side of chest, midway between the anterior and posterior extremities of the ribs; and, on dissecting off the skin, a similar cicatrix was found in the ninth and tenth intercostal space, exactly opposite to that in the skin. The same cicatrix was distinctly seen on looking at the inner surface of the chest, and a process of that part of the large omentum which had accompanied the transverse arch of the colon through the diaphragm, not only adhered to the edge of the cicatrix, but was incorporated with it, and projected into the intercostal space. The aperture in the diaphragm would have admitted the passage of the points of three fingers with difficulty, and was filled up by the protruding and returning portions of the transverse arch of the colon, and was situated between the last left rib and cordiform tendon of the diaphragm, and between two and three inches from the origin of the muscular fibres of the diaphragm from the last rib, and was on a line with the cicatrix in the intercostal space, but placed on a lower level when the diaphragm was depressed. On the other hand, when this muscle was pushed up, in a manner similar to what must occur, when it is in a relaxed state, or in the act of expiration, the opening in the diaphragm was then brought on a level with the cicatrix in the intercostal space, and considerably approximated to it. That part of the transverse arch of the colon which lay within the chest was at least a foot in length, was considerably dilated, and much thickened in its coats, was of a deep dark colour, was soft in several places, and at one point had given way. The two portions of the transverse arch of the colon which lay in the opening of the diaphragm were considerably constricted. The entering portion (or the portion next the *caput cæcum*) could still be drawn upwards and downwards, and the little-finger introduced into the interior of the tube could be pressed upwards, though with some little difficulty, through the opening in the diaphragm. The returning portion of the transverse arch of the colon was connected to the margin of the opening in the diaphragm through old adhesions of the omentum.*

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* The above account of his symptoms on admission was furnished by Dr Alexander Wood.

It was stated by a friend of this man, who was present at the inspection, that he had received a wound about fifteen months ago, in the lower part of left side of chest with a shoemaker's knife, in a quarrel with a woman with whom he cohabited, and that she was liberated from prison after his apparent recovery. Between the time of his receiving the wound and his death, it appears that he was at two different times a patient in the Infirmary with symptoms of severe ileus, and was each time dismissed apparently cured.

Though an examination of all the circumstances connected with this case leads us to the conclusion, that the protrusion of the transverse arch of the colon into the cavity of the left pleura took place in consequence of a wound made in the diaphragm, and that this was the cause of death, yet there are various considerations, arising from the accounts given by authors of cases where a greater or less number of the abdominal viscera had passed into the thorax from a congenital deficiency in the diaphragm, which ought to be carefully weighed before we can venture to give a definite opinion in similar occurrences, as this may involve most important consequences. Doubts will, and ought, under such circumstances, to exercise an amount of influence on our decisions, which we might not be disposed to allow them in ordinary cases. The fact, that the omentum not only adhered to the edges of the cicatrix of the wound observed on the inner surface of the thorax, but was also incorporated with it, and projected into the intercostal space, is sufficient to prove, that the omentum was present in the left side of the chest during the time that the wound was healing; but it is not of itself sufficient to decide the question which may be raised, as to the possibility of the passage of the intestine into the chest at some period previous to the infliction of the wound.

1. The first consideration which naturally presents itself on examining the recorded cases of the passage of some of the abdominal viscera into the thorax from congenital deficiency of part of the diaphragm, is the circumstance, that, though a considerable number of these have been observed in infants who were either still-born, or who died within a few weeks after birth, and had oppressed breathing from the moment of birth up to their death; yet there are others where the individual lived several years, and in some cases even to an advanced age, without any suspicion having been entertained that such a displacement of the abdominal viscera existed. In some of these, however, as we shall immediately see, the respiratory function was more or less embarrassed.

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* The preparation is preserved in the University Museum.

Riverius[*] relates the case of a young man, who, when slowly convalescing from intermittent fever, took an antimonial emetic from an empiric, and after ineffectual efforts to vomit, died some hours after. On dissection, the stomach was found in the right side of chest, and the lung of that side was defective. Up to the time of his death this young man had experienced no dyspnœa, had enjoyed good health up to the period of his last illness, and had served as a soldier. G. T. Weyland[†] has minutely detailed the case of a boy seven years of age, who had been affected with frequent vomiting from his infancy. He appeared to have no other complaint, but this from its frequency rendered his body thin and imperfectly nourished. He was not observed to have any difficulty of breathing, even when playing with his companions. When he was seven years of age the vomiting became so frequent, accompanied by pain of head aud abdomen, and his health was suffering so much, that a physician was sent for. After being subjected to treatment for about twelve days, he began slowly to recover his strength. Fourteen days after this he had a relapse after exposure to cold, and he died. On removing the sternum, the left side of the chest was seen to be filled with the folds of the intestines as high as the second rib, and the left lung was consequently much diminished in size, and devoid of air. The stomach was placed in the abdomen, was of great size, and lay in a vertical position, its pyloric extremity extending downwards to the pelvis. Dr Monro, *Tertius*, has detailed two very interesting cases of this kind. One was a female 22 years of age, who died with symptoms of internal strangulation, and on inspection of the body, a large portion of the arch of the colon was found to have passed through a small opening in the left side of the diaphragm. She never had any difficult breathing, but was subject to pain in the lower part of left side. The other was a male of middle age, who died with cerebral symptoms, accompanied with difficult breathing and expectoration, and the arch of the colon and the omentum were found in the left side of the chest. He had an attack of ileus four months previous to his death.[‡] Bartholin [§] and Clauder [‖] relate the case of a man who had always enjoyed a free and easy respiration, except a temporary fit of asthma, but who had long laboured under vomiting and constipation, in whom the stomach, the duodenum, part of the colon and omentum, had passed through a large opening with callous edges into the left side of the thorax. Petit[*] details the case of a man who had colic pains and difficult breathing for forty years, and on dissection, a great portion of the colon, of the omentum, and of the splenic extremity of the stomach, had passed into the left side of chest. The protruded parts had contracted no adhesions, and were not covered by a hernial sac. Sir Astley Cooper[†] relates the case of a woman, who died, when 28 years of age, with symptoms of inflammation of the abdomen of a few days standing. On dissection, about 11 inches of the transverse arch of the colon, and a great part of the omentum, had passed through an opening in the diaphragm into the left side of the chest, and the omentum adhered to the aperture in the diaphragm. Dr John Clark[‡] details the case of a man who died, when 40 years of age, with all the symptoms of peritoneal inflammation, and on dissection, a part of the transverse arch of the colon, part of the left lobe of the liver passed through an opening in the diaphragm, which he supposed to arise from congenital malformation of that muscle. This man had enjoyed good health up to the two last years of his life. As he had received a fracture of two of his ribs a year before his death, it may be argued that a rupture of the diaphragm may have occurred at that time; yet, as it is stated that he recovered from the injury without any unusual symptoms, the case may at least be adduced as additional evidence of the fact, that part of the abdominal viscera may be present in the chest without any symptom to indicate their presence. Chauvet[§] states, that on examining the body of a lieutenant-colonel, he found the stomach and colon in the left side of the chest. And Vetter[‖] observed in a very old person the whole tract of the small intestines lying in the left side of the chest.[¶] Along with the above cases we may also include other three, in which part of the abdominal viscera appear to have protruded upwards into the thorax through the interval which naturally exists between the outer edges of the muscular fibres of the diaphragm which arise from the ensiform cartilage of the sternum, and those which arise from the cartilages of the ribs. One of these is related by Morgagni.[**] It occurred in a man about 50 years of age, who died from a fracture of the skull, and the protruding part was the colon. A second case is related by Sir Astley Cooper,* on the authority of Mr Bowles, and in this the right extremity of the stomach, the beginning of the duodenum, and part of the omentum, protruded into the right side of the chest, and were covered by a hernial sac formed by the peritoneum and the pleura. This man was also 50 years of age, and subject to asthmatic attacks, and died from excessive vomiting, after the exhibition of an emetic, as occurred in the case related by Riverius.† Another case, where the diaphragmatic hernia protruded through the interval on the right margin of the fibres arising from the ensiform cartilage, is related by Professor Bignardi.‡

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[*] Opera Omnia Medica. Observ. Centuria Quarta, Obser. 67, p. 549. Lugd. 1690.

[†] Dissertatio Inauguralis Medica Duos Exhibens Casus Dislocationis Viscerum nonnullarum Abdominis. Jenae, 1831.

[‡] Morbid Anatomy of the Gullet, Stomach, and Intestines, p. 180. 2d edition.

[§] Boneti Sepulch. Anat. Tom. ii. p. 803.

[‖] Vide Sepulchretum, et Morgagni de Sedibus et Causis Morborum, Lib. iv. Epist. 54, §. 11

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[*] Malades Chirurgicales, Tom. ii. p. 161. 1783.

[†] Medical Records and Researches. London, 1798.

[‡] Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, Vol. ii. p. 118.

[§] Histoire de l'Academie Royale des Sciences de Paris for 1729, p. 14.

[‖] Aphorismen aus der Pathologischen Anatomie, S. 144, as quoted by Weyland.

[¶] Chauvet says nothing about the state of the respiratory and digestive organs during life in the case which he relates; and Weyland does not inform us whether the previous history of the case by Vetter was ascertained.

[**] De Sedibus et Causis Morborum, Lib. iv. Epistol. 51, §. 11.

After a knowledge of the above cases, it could not be argued that, if the protrusion of the transverse arch of the colon, in the case we have detailed, had arisen from congenital deficiency in the diaphragm, it must have manifested itself before the reception of the wound, by some embarrassment of the respiratory function. The fact, moreover, that this protrusion must have existed from the time of the infliction of the wound up to his death, without any marked impediment to the respiration, is obviously quite sufficient to invalidate any similar argument.

2. In the case we have related the protrusion of the colon through the diaphragm had occurred on the side of the chest, in which it is generally found in cases of deficient formation of the diaphragm. Of twenty-four recorded cases (not including the three last referred to,) which I have examined for this purpose, I find that in three only had the protrusion happened on the right side. One of these is the case of Riverius, already referred to; another is one of the two cases mentioned by Dr Macauly,§ and one by Bonn.||

3. The congenital deficiencies in the left side of the diaphragm, not only vary in extent, but also in position. In several of the recorded cases, the deficiency appears to have included the whole of the left side of the diaphragm, and in others it is merely stated that the opening was on the left side. In two cases the opening was placed in the cordiform tendon, (case of Petit, and one of the cases of Weyland); in one it was stated to have been near the opening for the *cava ascendens,* (one of Vetter's cases); in

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* Opus cit. p. 14.

† Petit (opus cit.) relates the case of a man long subject to dyspnœa, and who had been treated for asthma, in whom the stomach, the colon, and the omentum were pushed up into the left side of the chest, and were enclosed in a sac formed by the diaphragm, peritoneum, and the pleura. See also Beclard's Supplement au Traité de Scarpa, p. 132, for two cases where the sac was formed by the pleura and peritoneum.

‡ Sull' ernia diaphragmatica, 1827, as quoted by Laurence.

§ Medical Observations and Inquiries, Vol. i. p. 26, London, 1763.

|| Descriptio Thesauri Ossium Morbosorum Hoviani, No. 204, p. 69, as quoted by Laurence.

one the protrusion is said to have occurred through the opening for the sympathetic nerve, (Platner's Disput. De Hydrocel, as quoted by Morgagni); in three the protrusion occurred through the œsophageal opening (Resigius de Ventriculi in Cavo Thoracis Situ Congenito, Berlin, 1823); a case by Fantoni, as quoted by Monro, and a case by Clauder; in one it was placed an inch to the left of the œsophageal opening, (one of Dr Macauly's cases); in one, it was placed three inches to the left of the œsophagus, (case of Sir A. Cooper); in one, in the middle of the left portion of the diaphragm, (one of Monro's cases); and in one (supposing it to be a case of congenital hernia) it must have occupied nearly the same situation as in the case we have described, since it is stated to have been situated "about three inches from the ribs, and placed more anteriorly than the œsophagus."

4. In at least two of the recorded cases, the protruding parts were firmly adherent to the edges of the opening, (cases of Sir A. Cooper and Chauvet).* We would certainly expect that in cases of wound of the diaphragm, that if the person survived, inflammation of the edges of the divided muscle would occur, and probably cause adhesions between the edges of the wound and the parts which may have protruded into it, as in the case we have described. That lymph may be effused and unite the protruded parts to the edges of the opening in some cases of congenital deficiency of a part of the diaphragm, is *a priori* certainly quite possible, and in two cases which we have cited above it had actually occurred.

5. Some of the cases of congenital deficiency of the diaphragm terminated fatally, as in ours, by strangulation of the protruding portion of the intestines, (cases of Dr Clark, Sir A. Cooper, and Monro.)

Approaching the consideration of this case with all the caution which an examination of the recorded cases of congenital malformation of the diaphragm must naturally induce, we still feel strongly convinced that the protrusion of the colon was the consequence of a wound of the diaphragm. If we reflect upon the circumstance, that a sharp instrument could scarcely be thrust into the chest through the ninth and tenth intercostal space, where the cicatrix was found, without wounding the diaphragm, and thus necessarily at the part where the opening in it was found, if the muscle be in a relaxed state, or during expiration, as we have frequently satisfied ourselves upon the dead body; upon the great rarity of such small congenital deficiencies in the diaphragm; upon the uneasiness felt by the patient in the left hypochondrium, and the severe attacks of ileus after the infliction of the wound; conjoined with the improbability that a person could have arrived at the age of 45 without fatal strangulation of the intestine, and have acquired an athletic form of body, when that part of the intestine passing through the opening would with difficulty admit the passage of the little finger, even when the returning portion was empty, —we can scarcely suppose that the conjunction of the opening in the diaphragm and the infliction of the wound in the parietes of the chest, were in this individual a mere coincidence. It ought not, however, to be concealed, that a more accurate account of the previous history of the patient than we are able to give would have been very desirable.

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* In Sir A. Cooper's case, the omentum was the adherent part.

Believing that the protrusion of the intestine into the chest was in this case the consequence of a wound in the diaphragm, there are some cases on record which bear to it a greater or less resemblance; and it is of some importance to know, that the accounts given of them do not discountenance the idea we have formed of the nature of this case. Sennertus relates, in a letter to Hildanus,* the case of a man who stabbed himself beneath the ninth left rib, and died about seven months afterwards. On dissection the stomach was found to have protruded through the cordiform tendon into the left side of the chest.† In this case the seat of the wound in the parietes of the chest, must have been placed nearer the sternum than in the one we have detailed. Ambrose Paré‡ relates the case of a person who died eight months after receiving a penetrating wound in the chest, and in whom a large portion of the colon was found in the cavity of the left pleura. This person had suffered from colic pains after the reception of the wound. Mr Boyle § gives the case of a soldier who received a wound in the chest eleven months before his death. He died with symptoms of peritoneal inflammation, and a great part of the ileum and transverse arch of the colon had passed through an opening in the diaphragm, and became strangulated. From the time he received the wound "the respiration was affected, and even moderate exercise was supported with difficulty." Mr Greetham‖ has published a case of a muscular man, between 30 and 40 years of age, who had been wounded by a knife some years before in the left side of the chest, and who died with all the symptoms of strangulated intestine. On dissection, the omentum and a part of the colon had protruded through an opening in the cordiform tendon of the diaphragm. He had at times severe pains in the stomach after the infliction of the wound; but he had been able to act as a steward in a vessel during several distant voyages. The larger curvature of the stomach was drawn upwards towards the opening in the diaphragm by the omentum in the chest, so that it was nearly reversed.

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* G. F. Hildani, Medico-Chirurgi, Obser. et Curat. Chirurg. Centuriae. Cent. ii. Observ. xxxiii. 1541.

† Vide Morgagni de Sedibus et Causis Morborum, Lib. iv. Epistol. 54, §. 12 for other cases.

‡ Lib. 9, Cap. 30.

§ Vol. viii. of this Journal.

‖ Medical Gazette, Vol. x. p. 43.

Dr M'Crie[*] has given an account of a preparation preserved in the Chatham Museum, obtained from a soldier who had been wounded twenty-two years before, and who died of gangrene of the lower extremities. In this case the stomach and a great part of the transverse arch of the colon had passed into the chest. After the reception of the wound up to the time of his death, he laboured under dyspeptic symptoms, and his breathing was affected on walking fast, or on ascending a hill, but these did not prevent him from acting as a sergeant in his regiment.

It would also appear that similar effects may result from laceration of the diaphragm from a fall. Dessault[*] relates the case of a man who received a fall when 39 years of age, and who lived four years after this, in whom the stomach and arch of the colon had passed through an opening with callous edges into the left side of the chest. Though he was able to return to his usual employment after his recovery, he continued to complain of pain of chest and oppression of the breathing. Mr W. D. Morgan has described the history of a patient who died in the Bristol Hospital, in whom several parts of the alimentary canal were found within the left side of the chest. The opening in the diaphragm was attributed to a fall upon his back received thirty-eight years before. From the time of the injury to his death, he was able to follow his usual occupation as a mason, but had often suffered from asthmatic dyspnœa, dyspepsia and constipation.[‡] A very remarkable case is related by Mr Taylor,[§] of a man who had received many years before his death, a fall in which some of the left ribs were fractured. On dissection, a great part of the left side of the chest was filled by the stomach, and a large part of the transverse arch of the colon, yet he was able to perform the usual duties of a sailor up to his last illness, and the respiration appears to have been little affected. This man died after amputation of a leg.

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[*] Medical Gazette, Vol. xv. p. 872.

[†] Journal de Chirurgie per Dessault, Tom. iii.

[‡] Medical Gazette, Vol. xii. p. 673.

[§] Guy's Hospital Reports, Vol. iii. p. 366.

Art. VII.—*Case of Aneurism of the Aorta.* By S. Chisholm, M.D. Inverness.

A gentleman, aged 27, the subject of the present case, dated general ill health from February 1837, at which period he had a severe attack of influenza, and was copiously bled and actively treated for it. About the middle or latter part of November of the same year, when I was first consulted by him, he began to complain of pain in the loins; an uneasy sensation in the abdomen; a frequent craving for food, which was quite irresistible at times; and various symptoms of irregular digestion. His bowels were constipated; his tongue was furred; and he seemed to feel a disinclination for both bodily and mental exertion. He was at the same time evidently falling off in flesh and appearance. I was informed that, immediately before these symptoms supervened, he had imprudently ridden some distance without having his feet supported in the stirrups, but suffering himself to be jolted on the saddle in a somewhat violent manner, a mode of exercise he had recourse to, thinking to derive benefit from it.

About the beginning of January 1838, he was called on to take his seat in Parliament, and on his arrival in London, after travelling by land, he felt rather better than worse from the journey. It further appeared, that, for the first two or three months after coming to London, his health did not suffer materially, as, in his letters to his friends at home, he expressed himself feeling so well as not to be under the necessity of requesting medical advice. In the month of April, he was, however, induced to go down to Leamington, there to consult a celebrated physician, who treated him for symptoms which were believed to indicate a congested state of the liver and mucous membrane of the bowels. His health not improving satisfactorily at Leamington, he was advised and prevailed upon by his medical attendant to resign his seat in Parliament, and he returned to the Highlands very much reduced in appearance.

Shortly after his return to the country, in the beginning of June, he unhappily became engaged in a political controversy with some gentlemen who were at one time his particular friends, and the severance of whose friendship must have been very painful to his feelings. He, however, rapidly gained flesh in the country, and in the short space of five or six weeks, he must (judging by his appearance) have increased in weight very considerably indeed. During this time he did not follow, so far as I am aware, any medical treatment, or attend to any particular regimen, but took active exercise, lived freely as regarded food, not wine; and was in the habit of plunging almost daily into an open river. When pursuing these habits, and immediately after the excitement of writing a letter on the subject of the controversy already alluded to, he was on the 1st of August attacked with convulsions of a very formidable character. About 9 o'clock on the morning of that day, I was requested to visit him, when I found him in bed, complaining of being sick at stomach, and of seeing objects floating before his eyes. His tongue was loaded with a white fur; his pulse was natural. I was told that he had the previous day, on which he had been engaged writing the letter alluded to, yielded to the craving sensation, with which he had been distressed, by taking animal food at two or three different times between breakfast and dinner.

Viewing the symptoms of the case as indicating the presence of gastric irritation, I prescribed a solution of Epsom salts in an aperient infusion, to be taken in small but repeated doses. At 11 o'clock, two hours after my first visit, I was summoned in great haste to my patient, when I found him labouring under a violent convulsion, breathing stertorously, and foaming at the mouth, with his face livid and swollen. I immediately opened a vein in the arm, and abstracted about fourteen ounces of blood; after which a terebinthinate enema with castor oil was administered, and cold applications made to the head. He soon fell into a tranquil sleep, but in the space of an hour thereafter, again became convulsed. The convulsions recurred several times during that day and night, but were ultimately subdued in the course of the night by the application of leeches repeatedly to the head, sinapisms to the extremities, blisters to the nape of the neck, the soothing effects of morphia, and free action from the bowels.

He now lay in a perfectly oblivious state for the two following days, when on the 4th, consciousness returned, and the symptoms gave sanguine hopes of this young gentleman's recovery. These hopes were of short duration; for at this stage of the complaint, an attentive examination of the abdominal regions discovered a pulsating tumour in the epigastric region, rather to the right of the *scrobiculus cordis*, but without pain, except on considerable pressure, and without any particular sensation to attract his own attention to it. Dr Munro, my colleague in attendance on the case, and myself, concurred, after a minute, general, and stethoscopic examination of our patient, in the decided opinion of the disease, which now presented itself, being aneurism of the aorta. Our opinion, which of course could not be favourable under such circumstances, was, after due deliberation, communicated to the mother of the patient, and, consequently, further professional opinion was sought for. This young gentleman was now seen by several of the medical gentlemen of this town, (Inverness,) as well as by some of the most eminent gentlemen of the profession both in Edinburgh and London; but their views of the case were various, none giving a decided opinion in confirmation of Dr Munro's and my own, except my friend Dr Nicol of this place. Our lamented patient now progressively lost flesh, while he retained a fair appetite; his pulse, which had gradually increased in frequency, but diminished in strength, ranged from 100 to 120; his mind became perfectly clear and tranquil, and he continued free from any bodily suffering till the evening of Thursday the 6th of September, when, after being raised to get the bed made, he suddenly became very faint and cold, and his stomach rejected its contents. He did not rally much afterwards, but remained extremely low and faint the whole of the following day, (Friday,) and about 8 o'clock on Saturday morning, he lost consciousness. An hour and a half thereafter he expired without a struggle.

Inspection.—The body was examined 26 hours after death, and presented the following appearances. The corpse was universally emaciated; and the subcutaneous adipose tissue was entirely absorbed. The whole abdomen, including the epigastric region where the tumour was situated, was highly resonant from flatulent distension. A feeling of fluctuation was barely perceptible on the inferior and lateral part of the abdomen.

On opening the abdomen the stomach was found distended with flatus, descended an inch below the umbilicus. The intestines were also distended with flatus, and their inferior coils presented much coarse ramiform injection of a dark claret colour.

Seventy ounces of bloody fluid were found in the cavity of the abdomen, and of these twenty consisted of black coagula, moderately firm like recent polypi of the heart.

The pyloric extremity of the stomach adhered to the most prominent part of a subjacent tumour, and probably constituted the movable portion felt during life.

The pancreas, in a healthy state, overlay and adhered to the left and anterior part of the tumour, in a transverse direction.

Above the pancreas, a large artery, equal to a goose-quill, with its corresponding vein, descended from the left side of the tumour about its middle, where it was contracted, if not obliterated. The three cœliac vessels were traced back to their origin half an inch above the aneurismal aperture.

On removing the tumour and opening the aorta, a round aperture fully as large as a shilling opened into an aneurismal sac. The aperture was seated in the right side of the aorta, half an inch below the orifice of the cœliac artery, and the margin of the aneurismal aperture was rather rough and corrugated, but no steatomatous or other disease existed in the arterial coats. The internal coat could be traced into the sac to the extent of an inch and a-half on one side, and one-half of an inch on the other.

The tumour measured externally 5 inches long by 4 broad; but these dimensions were occasioned principally by a large recent coagulum (black and friable like those in the abdomen) surrounding the tumour and exterior to the sac, for the sac itself, when viewed internally, had the dimensions of 3 inches long by 2 broad.

The tumour burst into the abdomen at the upper part of its right side, beneath the capsule of Glisson.

The spine was not injured.

The right kidney adhered firmly to the tumour.

The heart was healthy, the mitral and aortic valves being merely a little thicker and more opaque than natural; but both presented their ordinary dimensions, and were capable of discharging their function.

The fundus of the stomach presented much dark speckled congestion, and the mucous membrane, which was thickened, admitted of being detached in large portions. The liver was healthy in structure and free from congestion.

J. Hope, M. D.
(Signed) S. Chisholm, M. D.
W. Munro, M. D.
John Inglis Nicol, M. D.
H. Fraser, Surgeon.

Remarks.—The complicated connections of the tumour, the firm adhesions to contiguous organs, and the appearance of the aperture and of the interior of the sac, demonstrate that the disease was not of recent standing. The nature of the tumour and the numerous important organs which it implicated, were circumstances rendering the disease necessarily mortal, and accounting for the failure of all the remedial measures employed.

The case now detailed is fraught with much interest, both pathological and practical. While it impresses in a very forcible manner the propriety of investigating the state of the abdominal viscera, by manual examination, in cases seemingly only dyspeptic, it exhibits at the same time the difficulty of forming a correct diagnosis in cases of internal aneurism, even after such an examination is carefully instituted.

I am inclined to think that, previous to the attack of the 1st August, the aneurism had not attained any tangible size, although it cannot be doubted, from the examination after death, that it was previously in existence; but that it then underwent a sudden enlargement, and that the oblivious state into which my patient fell from the cerebral affection, prevented any preternatural sensation from the progress of the disease being developed.

The different views which were taken of the malady by the several experienced medical practitioners who had the opportunity of examining the case, afford an instructive example of the obscurity attending pulsating tumours in the abdomen, and of the caution required on the part of young practitioners, in particular, in forming their diagnosis in such cases. The considerations which weighed with myself in support of the opinion I decidedly expressed, and which proved correct, were the circumscribed shape of the tumour, which was at the same time deep-seated,—the expansive feeling of the pulsation not being such as I would expect were it imparted through the medium of a solid tumour, the absence of that sallow waxy complexion which commonly indicates the existence of organic visceral disease of a malignant character, as might be expected, if the liver or pancreas had been the seat of the disease,—and latterly the continuance of appetite while the strength and flesh were rapidly declining,—the normal, though slow manner in which the bowels responded to the action of aperient medicine being such as I would not expect if there was disease in the intestinal tube, and the natural appearance of the evacuations ultimately produced by medicine, while there was no corresponding improvement or diminution in the disease; together with the stethoscopic signs elicited.

Inverness, 1839.

ART. VIII.—*Cases of Anasarca of the Scalp, supposed to arise from Chronic Periostitis over the Skull; with a case of acute Periostitis over the right Temporal and Parietal Bones, followed by exfoliation.* By JOHN REID, Surgeon, Markinch.

ANASARCA of the scalp, supposed to arise from chronic *periostitis*, is an affection, which, so far as I know, has not hitherto received particular attention. The complaint was first pointed to me by my cousin, Mr Alexander Reid, Kirkcaldy, who mentioned that he had had a great many cases of it, and that he had discovered it accidentally upon examining the heads of some individuals who complained of very great uneasiness about the scalp, accompanied with anomalous sensations in other parts of the system. This affection occurs both in males and females, and is attended with very similar symptoms in both; but, as it will be best understood by reference to cases, I will give four which have occurred in my own practice,—two in males and two in females, all in mature adult age.

CASE I.—July 27, 1833.—Robert Mitchell, aged 26, labourer. Until within these last twelve months this man has been stout and healthy, but about that time ago had a pretty severe attack of influenza, from which he never properly recovered. He now complains very much of great pain and uneasiness over the whole of the scalp; feels very weak, and is constantly perspiring; has a troublesome cough, accompanied with tough mucous expectoration, and inclination to vomit. He has been bled eight or nine times very copiously, but never felt any relief from bleeding. Upon examination the scalp feels very soft and loose over its whole extent, but particularly about the occiput. It can be pinched up in large folds betwixt the finger and thumb, and feels thick and engorged, and when much nibbled and pressed upon, a "disagreeable cracking" sensation is felt. Upon the whole, the patient has a very cachectic appearance, perspiring copiously night and day. The pulse is 110, small and sharp; the tongue foul and clammy; the bowels are irregular and depraved; he sleeps ill, and has little appetite.

As this was the first case of the complaint of which I was aware, and as it was amongst my first cases in private practice, I was guided chiefly in the treatment by Mr A. Reid, who, as I mentioned above, first directed my attention to the disease. The treatment consisted of repeated large blisters applied to the scalp, an alterative mercurial course, with saline medicines for the bowels, accompanied with the use of bitter tonic infusions, and occasional emetics. Such treatment was persisted in for more than a year before there was much change to the better; for the pain and softness of the scalp did not subside till about a dozen and a half of blisters had been applied. The patient was long weakly, and was troubled for two or three years with swelling of the absorbent glands in the neck. He is now in perfect health, and has no complaint. The swellings of the glands of the neck were no doubt owing to the great irritation induced by the repeated blisterings.

Case II.—April 4, 1838.—William Dryburgh, mason, aged 27, a stout built man. For some months past he has been in a very bad state of health, and unable for work, being very much troubled with severe pains of the head. Upon examination the scalp is found to be easily pinched up into thick folds, feels engorged and soft, and is painful on pressure. He has no appetite; he feels listless; cannot think of moving out of doors; he has a bad taste in the mouth, with foul tongue; and occasionally feels giddy. The bowels are depraved and irregular; the pulse quick and irritable; and he has troublesome cough, with copious perspirations. He has been bled frequently, and has got a great deal of purgative medicine; but thinks himself daily getting weaker and worse. Dr —— says it is some disease "in the head." In this case a similar course of treatment was pursued as in the former one, but, of course, modified according to prevailing differences in the cases. The treatment extended to about five months. Eight blisters were applied over the scalp, and a great deal of alterative medicine was taken. He is now quite stout and well, but occasionally complains of tenderness of the head.

Case III.—September 1838.—Margaret Oswald, aged 21, housemaid. She had been for some time back in very bad health,—having been constantly suffering from an uneasy pain about the head, accompanied with a sort of rough loose cough, and pretty copious expectoration. She stated that she had fallen off much within the last two or three months. She looked very pale, and rather cachectic; catamenia irregular and scanty; was attended by a physician in Edinburgh, who considered her "complaints very bad." Upon examination, the scalp felt very soft, and was easily pinched up and twisted round in any way; it had a thick œdematous feel, and appeared as if there was always a serous exudation from it. Upon percussion the chest sounded unusually well; the respiratory murmur was quite distinct, but accompanied with the sonorous rattle. Pulse was quick and small; tongue clean but very pale; bowels not depraved. This patient was ordered to take one aloetic pill and one blue pill every other night, followed in the morning with a few salts and senna; five blisters were applied over the scalp; and the latter course of the treatment consisted chiefly of bitter tonic infusions combined with a little of the sulphate of iron. The treatment was continued for three months. She is now quite well, having no complaint whatever, and the scalp feels quite firm.

Case IV.—October 1838.—Christina Miller, aged 19, a country girl, of a soft flabby appearance, and of fair complexion; for two years back she never enjoyed any thing like good health, having been always languid and desponding; catamenia irregular and scanty; she complained of wandering pains about the head, and could not help always fingering it. She had a slight cough, and was troubled occasionally with sweatings; pulse quick; tongue clean, but glossy, and always feels a little clammy in the mouth; bowels rather costive, but not depraved; appetite small; sleeps ill. Upon examination, the scalp was found to be very soft, especially round the occiput, and easily pinched up; it was very sore when pressed, creating a disagreeable sensation throughout the whole head. The treatment in this case was similar to that of the above. Eight or nine blisters were applied to the scalp. The patient is now, (April 26th 1839,) nearly well; the pain and softness of the scalp being gone, and the general health greatly restored.

I might have given several cases of a similar nature; but the above are sufficient to illustrate the general features of the complaint. It may be observed that they were all more or less accompanied with suspicious pulmonary symptoms; which, along with the tendency to sweatings, and the other cachectic indications, are very apt to deceive the medical attendant. In these cases the affection of the scalp seems to be the essential or primary cause of the other symptoms.

In the two first cases, both males, there was very great derangement of the intestinal secretions manifested by the bad taste in the mouth, the foul tongue, and the depraved dark stools. In the other two cases, again, both females, the bowels did not seem to be so much affected, being only rather costive, though not particularly depraved in their secretions; but the catamenia were always scanty and irregular. Now it would appear that the derangement of these functions respectively was the chief cause of the general derangement of the system; and that the restoration of these again to their healthful state was the chief means of cure. Such an inference is in all probability so far correct; but, nevertheless, the affection of the scalp itself cannot be overlooked. In two of the above cases, and in some others, the blistering was not commenced for some time after the other treatment; but under that system the patients improved very little, being always very uneasy, and universally directing attention to their head. But as soon as the blistering was commenced they always expressed themselves as being greatly relieved; and there was invariably such a quantity of thick serum from the blistered surface, that they were fully convinced that its discharge was the great means of relief. After every blister the scalp became more and more firm; and in proportion to the quickness in which the blisters healed, so did the pains of the head subside, and the general health improve. The above cases were all attended by a very leucophlegmatic state of the system; indeed, all the symptoms were those usually attendant on anasarca resulting from visceral obstruction. But it is rather remarkable, that in none of these cases was there any œdematous swelling of any other part of the body; on the contrary, every other part appeared rather thin; but the skin uniformly presented that pale waxy appearance which always accompanies cutaneous dropsy.

There is in this complaint one peculiarity well deserving special attention, namely, the general uneasiness of the patient, and his confirmed conviction that his complaint has not been understood.

In all the cases which I have seen of it, the patients were never satisfied as to the treatment till the blisters were applied; for the continued uneasiness, or soreness of the head, seemed to keep them in a perpetual state of anxiety. This anasarcous state of the scalp is certainly accompanied with symptoms almost peculiar to itself; for in anasarca of any other part of the body, the patient does not usually suffer much from pain. But it is well known that, in anasarca of the lower extremities, there is often a good deal of pain accompanying the swelling, immediately over the whole anterior surface of the tibia, which seems to arise from the periosteum being more or less implicated in the increased action of the part. Now, such being the case, I am led to conclude that the soreness accompanying anasarca of the scalp may be greatly owing to the periosteum of the scull being more or less inflamed. If the increased action in such cases were confined to the cellular substance under the scalp, the probability is that there would be little pain; for, in general, anasarca, say after any of the eruptive fevers, and where the whole integuments both of the face and head are often very much swollen, we have never much soreness evinced on the part of the patient. So, according to the above view of the complaint, I am inclined to consider it as more or less participating in the nature of subacute periostitis over the skull, accompanied with effusion into the cellular substance. This view taken of the complaint may appear rather decided; and perhaps it is too hypothetical; but it has been adopted from particular inferences, deduced from comparative observations upon the specific symptoms of anasarca and periostitis generally. I have had frequently cases of periostitis of the tibia, in females accompanied with painful and difficult menstruation, and where the pain, swelling, and the irritative fever were very similar to those of the above cases, all of which invariably yielded to the same treatment, namely, the application of, and the use of blisters, alteratives, and tonic bitter infusions. In illustration of this I adduce two cases.

Case I.—Miss F———, aged 20, a stout young lady of rather phlegmatic temperament, for some weeks past felt an uneasiness over the right tibia, which increased to very acute pain, especially after walking or lying down in bed. The integuments over the greater part of the anterior surface of tibia were very much puffed up, of a bright red colour, very glossy, painful, and pitted slightly upon pressure. The catamenia were scanty and irregular; the tongue clean; and the bowels pretty healthy. This young lady had her leg first leeched and subsequently poulticed, followed by the cold saturnine lotion, but with very little advantage. Blisters and an alterative tonic treatment were then adopted with the best results. The pain and swelling subsided in the course of three weeks, and the general health was soon restored. Four blisters were applied.

Case II.—Mary F———, aged 25, a fine healthy young woman, after walking three or four miles in wet shoes, felt one of her legs particularly tired, and a little painful between the knee and ancle. In the course of a few days the pain became very severe over the middle portion of tibia, which was very much swelled to the extent of a hand-breadth, very shining, red, acutely painful, and pitting on pressure. The catamenia were irregular; the tongue clean; the bowels regular; the pulse quick; and symptoms of irritative fever were present. In this case a few leeches were applied, afterwards poultices for a few hours, which were succeeded with blisters, and afterwards the cold saturnine lotion. Recovery took place in about five weeks. Five blisters were applied.

These two cases correspond, in their general features, very much with the two female cases of the affection of the scalp, and they were all cured on the same principles of treatment. In the whole the blisters seemed to be the most important means of relief; for as I said before, the patients never expressed themselves as being relieved until they were applied. When the affection of the scalp came under my notice, I considered it nothing more than œdematous swelling of that part, connected with derangement of the system generally. But after considering it more maturely, and in reference to the above cases, and some others, I was led to consider them all of one nature; and arising from subacute inflammation of the periosteum. Whether I am correct or not in this pathological inference, remains to be confirmed by the opinions and observations of those who have more extensive opportunities for investigating the subject; but of this I am convinced, that the general practitioner will find such affections of the scalp by no means uncommon; and that he will generally find the above-mentioned treatment very successful. But it must always be borne in mind, that the soft loose state of the scalp, along with the pain and irritative fever, are the chief diagnostic symptoms of the complaint; and that blisters with alterative tonic medicines, are the sovereign means of cure.

By adopting the above plan of treatment the medical attendant will often have the satisfaction of curing his patient, after every thing else has failed. It is very difficult to persuade patients to submit to the blistering; but I have always found them very willing when they were made aware of the nature of their complaint, and advised of the efficacy of the treatment.

Besides cases of the above nature, where the most of the posterior portion of the scalp was affected, I have met with many others where the complaint was only of a partial nature—being confined to one particular part often not larger than the size of a penny. In such cases the general symptoms were of course much less marked; but the local pain was often very acute, resembling in some instances slight attacks of ***tic-doloureux***, but with this difference, that the pain never went entirely away. In such cases the treatment is the same, the blisters being applied just over the site of the disease.

I have sometimes found patients so exceedingly irritable under this complaint, that I considered all the symptoms to arise from spinal irritation; but after some experience I have found the counter-irritant system of treatment along the spine very unsatisfactory, and very unpleasant in many ways; for after having subjected a patient to the *potassa fusa*, and all the painful sequences of its effects, I have had to back up, as it were, along the spine, until I arrived at the seat of the complaint, namely, the scalp, and there commenced anew, as " the disease had now shifted up to the head !" Such a confession is certainly a little humbling; but every candid practitioner will admit that it is often necessary to " shift ground" in cases of spinal irritation, for not unfrequently are such cases of such indefinite origin, that no medical man can assign their true cause. I would not have it to be thought that the general symptoms referable to this affection of the scalp are always to be considered strictly dependent upon it, but this much I may affirm, that they always more or less accompany it; and I have never found the local symptoms deceive me. But in some cases the looseness of the scalp is not to that extent as to admit of its being much pinched up and twisted round; however, it will always be found soft and engorged to the feel, and altogether presenting the appearance of being naturally thick and full. And there is constantly more or less pain and uneasiness complained of by the patient, and particularly when the part is nibbled and pressed upon.

I may mention, that the pulmonary symptoms sometimes accompanying this complaint evidently arise from irritative chronic bronchitis. In the most of the cases which have come under my observation, I have examined the chest both by percussion and the stethoscope. I have generally always found the chest to sound well; but the respiratory murmur was always more or less accompanied with the *rale sonore*, and not unfrequently with the *rale sibilant*. The bronchitic symptoms gradually gave way as the general health became improved.

Case of Acute Periostitis of the Scalp.—Thomas Pratt, aged 14, a deformed boy, having extensive curvature of the spine, for some days past has complained of very acute pain about right ear, extending all around that side of head. The parts looked a little swelled, presenting all the symptoms usually attendant on the first stage of suppuration of the ear; but pain was very severe, extending upwards and backwards over a considerable portion of the scalp, accompanied with a little tumefaction. There was considerable fever, with great intolerance of the slightest disturbance. Leeches, poultices, and cold applications were applied in succession, and often repeated; but apparently with very little relief. In the course of eight or ten days, a small discharge of matter took place from the ear, and at the same time a puffy circumscribed swelling rose all over the temporal bone, and gradually extended both upwards and backwards to a considerable extent. As fluctuation was quite distinct behind the ear, an incision was made through the scalp down to the bone, which gave outlet to an immense quantity of sanious discharge of a dirty-red appearance and of intolerable fœtor. After this a large poultice was applied, which was constantly filled with the discharge. In about three weeks the discharge from the opening was very much lessened, but there appeared another swelling upon the occiput, just over the posterior fontanel, which burst of its own accord, and discharged a considerable quantity of sanious matter similar to the first. After these discharges the pain of the head considerably abated, and altogether the patient seemed quite relieved. The posterior opening always presented a very irritable appearance; and at last a piece of bone of a triangular shape, and about half an inch in size, was protruded from the wound. The exfoliation appeared to be from the internal table of the scull, as it presented a rough, convex surface, and a smooth concave one, bearing the impression of the meningeal artery.

After the swelling had subsided, I was surprised to find a prominent soft, defined tumefaction, along the tract of the whole lambdoidal and squamous sutures of the affected side, through which were felt the pulsations of the brain quite distinctly. And at the junction of the temporal with the parietal bone, the space was so large that the brain seemed to protrude to the extent of a large knuckle, and pulsated strongly; and when pressure was made on this part, the boy said he felt it through all his head, and that it made him sometimes stupid.

It was not until I discovered the above separation of the bones that I considered it to have been a case of acute periostitis, having merely thought it one of diffuse cellular inflammation, but the exfoliation of the bone and the total breaking up of the sutures gave me a view of the case entirely different. The boy is now in very good health, but the opening behind the ear is still discharging; and the separation of the bones, and pulsation of the brain through the fissure, are much the same as at the first.

ART. IX.—*Case of sudden and temporary occurrence of Presbyopia in a young Boy* By JAMES HUNTER, M. D. Surgeon to the Eye Dispensary of Edinburgh.

THE patient in this case was a very intelligent boy, 9½ years of age, the son of a pensioner living in the vicinity of Lasswade. He had been at school for upwards of three years, and was very fond of his books. His sight began to fail about three weeks before I saw him, and was so much impaired in the course of four days that he could no longer see to read ordinary type with the naked eye. He had never had inflammation or other disease of the eyes, nor received any local injury that could have caused this affection. His general health had always been good, and he never felt better than at the time when his sight gave way. I examined his eyes minutely, but could detect no visible symptom of disease. There was no vascularity of the tunics; the size and shape of the pupil, the motions of the iris, eyeball, and eyelids, were perfectly normal, and he felt no pain or uneasiness. He could see distant objects as well as ever, but near ones appeared very indistinct. With the naked eye he could read print of this size, [DISPENSARY], but could not make out the letters in a type of the same size as that used in printing these pages. In examining a small object, he required to hold it at a considerable distance from the eye, so as to obtain greater distinctness.

When he put on his father's spectacles, he could read the smallest type with perfect ease, but distant objects seen through them appeared obscure. The spectacles from which he derived so much assistance were fitted with convex glasses of nine inches and a half focal distance, and they suited him so well that he used them for reading his favourite books, ever since he had discovered their power of improving his sight.

To ascertain with more precision the nature of this affection, I constructed an Optometer on the principle of the one invented by Dr Porterfield. * I took a slip of stiff white pasteboard, fourteen inches long, and one inch and a half wide, and drew down its middle a fine black line, extending the whole length of the slip: at half an inch from one end I made two pin-holes, one on each side of the line, and about one-eighth of an inch from each other, and then folded up about an inch of the slip of pasteboard at this end, so as to make a right angle with the rest of it. When this instrument, laid on a stiff book to prevent its bending, is held to the eye, so that the observer looks at the line through the two pin-holes in the doubled up part, he will see two lines in place of one. These two lines are not parallel, but inclined so as to intersect each other; the degree of inclination and position of the point of intersection varying with the focus of the eye. To a myopic eye, where the focus is short, the inclination of the lines will appear greater, and the point of intersection placed nearer the folded up end of the instrument, than to an eye of an ordinary power of vision; whilst to a presbyopic eye, the point of in-

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* Porterfield on the Eye, Vol. i. p. 434. Edin. 1759. The Optometer, as improved by Dr Young, is described in the Bakerian Lecture for 1801, and also in Rees' Cyclopedia in the article *Optometer*.

tersection will appear very distant, or the lines may incline so slightly as not to cross at all.

Having prepared my Optometer, I made one or two preliminary experiments with it on eyes of ordinary power, and caused the observers to mark with a pencil the point of intersection. I then made the patient use the instrument, and tell me what he saw. He at once said he saw two lines that crossed each other. I put a pencil in his hand, and told him to mark the point where they crossed. He immediately did so, and the spot marked was three inches and a-half beyond the place where the crossing appeared to those who possessed an ordinary power of vision. I repeated this experiment many times with the same results, and ascertained that both eyes were equally presbyopic. In some of these experiments there was a slight variation of half-an inch in the position of the pencil mark, it being sometimes a quarter of an inch nearer, and at other times a quarter of an inch farther off. This arose from the difficulty of determining the exact point of intersection of two lines so slightly convergent, that, at the crossing, the one line lay as it were on the top of the other for about half an inch. After this I made the boy repeat the experiment with his father's convex spectacles on, and tell me what he saw. He said he saw two lines, as formerly, but much more distinctly; and on bidding him mark where they crossed, he immediately pointed to a place within a quarter of an inch of the very spot indicated as the point of intersection by those whose eyes were of ordinary power. This was repeated several times, and on both eyes, and always with the same results. I then made him put on spectacles fitted with concave glasses of six inches focus, and look through the pin-holes in the Optometer. He said he saw two lines as before, but very indistinctly; and although they came nearer to each other they did not meet or cross as formerly. To guard against any deception, I made various trials, using one while a convex glass, and at another time a concave one, without the boy's knowledge; but the answers he gave were always in perfect accordance with the principles of optics.

I ordered his bowels to be freely moved with rhubarb and calomel, and if any worms were observed in the evacuations, that he should get a dose of turpentine in castor-oil; this to be continued at intervals of two days till all the worms were brought away. If there was no appearance of worms in the evacuations, and if the complaint still continued, I recommended that he should have an aperient of senna and sulphate of magnesia twice a-week, along with a rather spare diet, and active out-door exercise: to be kept from school, and on no account to use spectacles. Six weeks afterwards his father called on me, and said, that exactly three weeks after I had seen him, the sight began to improve, and in the course of two days was quite restored. The medicines I had prescribed acted freely on his bowels, but no worms were observed. He had returned to school, and could now see to read, without the assisttance of spectacles, as well as before the occurrence of the disease.

Although cases of Presbyopia in children are mentioned by writers on diseases of the eye,* it is a very rare complaint, being seldom met with in persons under 40 years of age. In Presbyopia the point to which the rays proceeding from near objects would be converged is situate behind the retina, and therefore the images of near objects formed on the retina are not sharp and well-defined; but the rays from distant objects, being less divergent, are more easily refracted by the humours of the eye, and are brought to a focus just at the retina, so as to give a clear and distinct picture of the object. The proximate cause of Presbyopia may be either a shortening of the antero-posterior axis of the eyeball; a diminution in the refracting power of one or other of the humours of the eye; or an inability to effect the change (whatever be its nature) in the position or curvatures of the transparent media, required for the accommodation of the eye to distinct vision at different distances; so that the eye, after being excercised on a distant object, cannot make the change necessary for the distinct vision of a near one.

The experiments with the Optometer do not lead to any certain information as to which of these states existed in the eyes of the boy whose case has just been related. They merely show that the indistinctness of vision was caused by the rays from near objects being converged towards a point not at the retina, but at some distance behind it: but a consideration of all the circumstances of the case may help us in our conjectures as to its proximate cause.

Against the idea, that the Presbyopia in this case arose from shortening of the antero-posterior axis of the eye, caused by the pressure of tumours, or the effusion of fluids in the orbit, it may be urged,

1. That the retinæ continued perfectly sensible, as shown by the distinctness with which distant objects were seen, as also near ones, when the eyes were assisted by convex glasses; whilst in cases where the axis of the eye is shortened by pressure in the orbit, there is usually more or less insensibility of the retina caused by the degree or inequality of the pressure.

2. There was no unusual projection of the eyeballs.

3. The motions of the eyeballs were unimpaired, and there was no strabismus.

4. The two eyes were equally and simultaneously affected;

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* Mackenzie on Diseases of the Eye, article Presbyopia. Ware, Phil. Transactions, Vol. ciii. 1813, p. 48.—Rosas of Vienna and others.

which is not likely to have been the case had the Presbyopia been caused by pressure in the orbits.

To have determined if the refractive power of the humours of the eyes was diminished, could have only been done by making the patient repeat the very difficult experiments performed by the late Dr Thomas Young on his own eyes, as recorded in his Bakerian Lecture for 1801; but this was impossible with the very young boy whose case forms the subject of this paper; and, indeed, they cannot be tried by any one who is unacquainted with the science of Optics, and even then are very difficult, and I could not have checked the results. But as in the present case, there was no flattening of the cornea; and as it is rare to find any sudden change in the density of the humours which shall affect both eyes equally and simultaneously, it is not likely that a diminished refracting power of the humours was the cause of the disease.

All things considered, I think the best explanation of this case is to suppose that there was some derangement of the mechanism by which the eyes are accommodated to the distinct vision of objects at different distances. When the eye is turned from a distant object to the contemplation of a near one, a short interval elapses before the latter is seen distinctly; this interval being occupied in the adjustment of the focus of vision. During this process the only visible change is a slight contraction of the pupil; but all physiologists agree that some other change must take place. The lens must either become more convex, or move forwards, or the antero-posterior diameter of the eyeball be lengthened, or the cornea become more prominent, or perhaps there is a combination of all or of some of these modes of adjustment. As all the above actions imply a power of contraction and relaxation in certain internal structures of the eyeball, it is very probable that the movements of these parts should at times be subject to derangement from spasm or from over-relaxation, in the same way as other organs endowed with a contractile power; and therefore, I think it not unlikely that, in the present case, the eyes had temporarily lost the power of changing from the state necessary to fit them for the distinct vision of distant objects to that state required for the distinct vision of near ones; but whether that change is to be regarded as a *contraction* of certain parts, such as the ciliary ligament, as some suppose, or the fibres of the lens, as believed by others; or in a *relaxation* of these or other parts, cannot be determined in the present imperfect state of our knowledge of the exact manner in which the eye is adjusted to distance. This view of the case is supported by the following circumstances.

1. The affection and recovery of the two eyes were simultaneous and equal, as might be expected if the Presbyopia depended on a spasmodic derangement of their adjusting apparatus, which,

being destined to act simultaneously and equally in health, is likely to be similarly affected in disease.

2. The vision of distant objects was perfect, and near objects were seen quite distinctly with convex glasses; showing the sensibility and other functions of the retina to be unaltered, and that the cause of the disease was one that did not interfere with the functions of the eyes, excepting by depriving them of their power of adjustment to distance.

3. Other cases of the sudden occurrence of Presbyopia in young children have been traced to the existence of various disorders, such as intestinal worms, epilepsy, and diseases of the brain or spinal chord, all of which are known to be frequently accompanied by spasmodic affections of different organs.

The treatment of the present case was very simple; but I would call particular attention to the necessity in all similar cases of strictly prohibiting the use of spectacles in the first instance, for they can always be resorted to at an after period should the affection prove a pemanent one; and I have but little doubt that, if the wishes of my patient had been complied with, and he had been allowed to continue to use his father's spectacles, the Presbyopia would become a confirmed disease.

May 16, 1839.

Art. X.—*Cases of Scarlatina, with Observations on the Nature and Treatment of that Disease.* By William Cullen, M. D., Cupar-Fife.

During the whole of the winter of 1838–9, scarlet fever has prevailed in this town and neighbourhood; and the district to the south-east between this place and the coast has been visited with it very generally. Its diffusion has been slow, but this is one of the most curious circumstances of the disease. A great proportion of the cases have terminated fatally, which is my chief reason for writing on the subject. In the village of Kilconquhar nine have died out of eighteen or nineteen who were seized. About Colinsburgh and the Largoward district it has been equally fatal, there having been in some families three or four deaths. And in the united villages of Elie and Earlsferry, about one-half of those seized have died. In this town and immediate neighbourhood, the mortality has likewise been great. Thus its destructive nature makes it a subject of deep interest, as scarlet fever has not heretofore been always considered a dangerous disease.

At first sight it may be doubted whether this disease is not the *cynanche maligna*, as this latter affection sometimes makes its appearance as an epidemic; but from all the instances that have come under my own observation, I am clearly of opinion that it is a different disease, and that for the following reasons :—

1*st*, In all the cases that I have seen, there have been no ulcers of a malignant kind on the fauces. In every instance, the ulcers have exhibited the appearance of small distinct white spots, which have not in any case run into one another.

2*dly*, I have observed some cases of this epidemic where the fever and eruptions were considerable, but where there was scarcely any affection of the throat whatever.

And 3*dly*, The slowness of its diffusion is contrary to what occurs in *cynanche maligna* when this latter disease appears as an epidemic. In this town and the districts I have referred to, the scarlet fever sometimes almost disappears for two or three weeks at a time, and afterwards bursts out afresh, attacking several families living contiguous to one another, almost at the same time.

From these considerations it is evident that this epidemic is the scarlatina as described by Dr Sydenham and others ; and its definition will perhaps be best given by describing some of the cases that occurred in my own practice. I shall only quote three or four of the worst cases out of about thirteen or fourteen that came under my observation, all the others being either somewhat similar, or comparatively mild, and terminating favourably.

On the 25th of February last, I was called to J. S., a fine boy, aged 8 years, residing at a boarding-school, who had been quite well the day before. His teacher stated that, before going to bed the previous evening, he had complained of pain in the head and back, felt cold, and had a slight degree of shivering. He had his feet bathed in hot water, and was put to bed, taking at the same time a copious draught of warm gruel. When called next morning by the servant, it was found that he had been restless during the night, and now felt feverish, but was not so ill as to excite any uneasiness in the mind of his teacher, who about 7 o'clock gave him of his own accord a calomel powder. This operated pretty smartly as a purgative before 10 o'clock ; and when I was called to him about 11 A. M., the fever had increased since the operation of the medicine. He now felt extremely hot ; had great thirst ; the face was flushed ; he complained much of headach ; and was exceedingly restless. He did not complain of his throat, but I could perceive by the thickness of his voice that the throat must be affected, and found upon looking into it considerable redness and swelling of the fauces. There was an eruption on the face, neck, breast, and arms ; the pulse was 130.

℞. *Tart. Antimonii* gr. ii. *solve in aq. ferventi.* ℥iii. *dein adde Acet. Scillæ* ʒss. *Fiat mistura, cujus sumat cochleare minimum tertia quaque hora.*

℞. *Acidi. Nitrici* gtts. xx. *Aq. Fontanæ* ℥viii. *M. Fiat gargarisma.*

At 6 o'clock P. M. the fever and restlessness had greatly increased. The eruption was now diffusely spread over the skin, appearing in some places as if above the cuticle; pulse 140. I applied the cold affusion, after which my patient felt much more comfortable. The pulse fell immediately to 116. At 11 o'clock P. M. it was again at 140; skin as hot as ever. The cold affusion was again applied, and with the same good effect.

26th, This morning, in consequence of the fever being ardent, the cold affusion was applied at 6 o'clock and also at 10. The patient felt cool and pretty well for a couple of hours or so after each application of the cold water. The pulse was lowered 30 or 35 beats per minute every time, but in the space of three or four hours it was as high as ever. I counted it to-day at 150. Complained more of headach; the throat was a good deal inflamed; skin perfectly dry; thirst not so great as might be expected.

Sanguinis emittantur de brachio ℥x.

℞. *Calomelanos, Pul. Jalapæ āā,* gr. iv. *Pulv. Antimonial.* gr. iii. *M. Sumat statim. Cont. Sol. Tart. Antimonii et gargarisma ut antea.*

This afternoon about 5 o'clock, notwithstanding the coldness of the weather, the patient called out most anxiously for the cold affusion, which was then applied, and again at 10 P. M. Always after the use of the bath the eruption appeared brighter than before. He had three stools of a dark colour since morning.

27th, The patient had passed a better night; skin softer to the touch, but still quite dry; pulse 130.

℞. *Calomelanos,* gr. vi.; *Pulv. Opii, Pulv. Ipecacuanhæ,* āā gr. i.; *M. et in Pulveres* iii. *dividantur. Sumat unum quartis horis. Cont. Sol. Tart. Antimonii et gargarisma.*

In the afternoon I observed numerous white spots on the fauces; but although the throat was worse, the other symptoms were abated; pulse 126.

℞. *Acidi Muriatici,* ʒss.; *Syrupi Papaveris,* ℥ii.; *Infusi Rosæ,* ℥vi. *Fiat gargarisma.*

28th, This morning the patient is much better in every respect; pulse 96; bowels rather confined.

℞. *Sulph. Magnes.* ʒvi.; *Bitart. Potass.* ʒi. *Aq. Puræ,* ℥viii. *M. Sumat statim.*

From this time he continued to improve. On the 1st of March he began the use of nitre and cinchona bark, with a moderate allowance of port wine. For some time his urine was scanty, and there were dropsical swellings of the skin in different parts. All these symptoms yielded in a short time to tonics and diuretics with an occasional purgative. About the 7th, glandular swellings behind the ears appeared, which gradually went off, by the use of the camphor liniment.

Case II.—Feb. 27th, A young lady, aged 13, of spare habit, who was quite well yesterday, was this morning affected with sore throat and severe headach, attended with considerable fever; tongue covered with a thick fur; great oppression at the precordia; skin hot and rather moist. An emetic was given, which seemed to relieve the oppression, and in the afternoon the eruption made its appearance. At this time the throat was much inflamed, and she felt exceedingly restless. The eruption seemed as if completely under the cuticle, or rather the cuticle appeared like a diaphanous veil, covering the eruption and floating above it. At this time there was considerable diaphoresis, which was encouraged by a solution of tartarized antimony. An acidulated gargle was used every two or three hours, and four grains of calomel, with the same quantity of jalap, were given in the evening. The pulse was 130.

28th, The purgative operated freely; the headach was relieved, and throat rather better; the skin continued open; urine scanty and high-coloured; pulse 130. The diaphoretic, with the addition of small doses of nitrous ether; as also the gargle, were continued.

March 1st, Patient felt much better to-day, but the pulse continued still about 130.

℞. *Calomelanos, Pulv. Jalap.* āā. gr. iv. *Pulv. Ipecacuanhæ,* gr. i.; *M. Sumat statim.*

March 2d, The patient is much better in every respect to-day. Pulse 100. From this time she progressively improved, requiring no medicine except the cinchona bark with nitre, and once or twice a purgative.

Case III.—Feb. 21st, A young woman, aged 15, of a florid complexion, had been complaining of headach and sore throat for two days, and to-day she has been much worse, being in a high state of fever, with great oppression at the precordia; tongue loaded; throat much inflamed; and an eruption all over the face, neck, breast, arms, &c. There was a great deal of mucus about the throat and fauces, and she had been retching, but could get nothing up; pulse 106.

℞ *Pulv. Ipecacuanhæ,* ℨss. *Sumat statim.*

The emetic operated freely, and the violence of the retching produced considerable hemorrhage from the nose.

22d, This patient is much better this morning; she slept pretty well after the hemorrhage stopped last night, and feels comparatively well. The eruption seems to be going off, and the throat is much better; pulse 90.

℞ *Calomelanos,* gr. vi.; *Pulv. Jalapæ,* ℈i. *M. Sumat statim.*

23d, She was sitting up to-day, quite well to all appearance, and from this time progressively improved.

Case IV.—On the 16th of March, I was called to J. Boyd, a boy aged 4 years, who had had scarlet fever. The parents of the child said the case was so mild, that they had treated it themselves, giving the little boy occasionally a dose of salts and senna. It was now twelve days since he had been attacked, and for the last two days dropsical swellings of the skin had appeared in different parts of the body. The feet were at this time considerably swollen, as also the face and hands. If he lay on one side for two or three hours at a time, the cheek of that side became so much swollen as to close up the eye. He had hard glandular swellings behind the ears. His urine was scanty, thickish, and as black as tar. The stools were of the same odour and consistence. In fact, there could be no difference perceived between them. He did not complain of pain, except upon pressing the abdomen. The tongue was dry, and slightly furred; he had no desire for food; he did not complain of thirst; he was much emaciated; the pulse varied from 110 to 130.

℞ *Calomelanos*, gr. iii.; *Pulv. Scammoniæ Compositæ*, gr. v.; *Pulv. Ipecacuanhæ*, gr. ss. *M. et fiat hujusmodi Pulv.* ii. *quarum unum nocte maneque sumend.*

℞ *Acet. Scillæ*, ʒii.; *Spt. Ætheris Nitrici*, ℥i.; *Syrupi aurantii*, ℥ii. *M. Cochleare unum minimum ter quaterve in die sumendus.*

The patient was ordered chicken-broth or beef-tea with toast, and any light nourishing food they could get him to take. The camphor liniment was used for the glandular swellings.

17th, There is to appearance no change since yesterday; urine as scanty as ever, and dark coloured. He has had two or three trifling evacuations of the same colour as before, and complains more of pain in his bowels; pulse 130.

℞ *Sulph. Magnesiæ*, ℥ss.; *Bitart. Potassæ*, ʒi. *Aq. puræ*, ℥viii. *M. De quo capiat cyathum parvum omni hora donec alvus ter quaterve respondeat.*

18th, The saline mixture produced several stools in the course of the night, and what has been passed this morning is of a thicker consistence. The urine is still small in quantity, but is not so dark coloured. It seems as if it were a mixture of healthy urine and tar water. Pulse 126.—*Cont. pulveres et mistura diuretica ut antea.*

19th, The urine is more natural in appearance to-day; the feet and hands are not so much swelled; the face is much the same; little improvement otherwise. Pulse 120.—*Rept. mistura salina.*

20th, He has had several stools since yesterday; urine still scanty, and very dark-coloured; pulse 130.

℞ *Acetat. Potassæ*, ʒii. *Infusi quassiæ*, ℥vi. *Tincturæ Digitalis*, ʒii. *M. Cochleare unum mag. ter quaterve in die sumend.*

21st, To-day this little patient appears better; he has voided a good deal of urine since last night; the swellings appear to be going off. From this time till the 25th, he continued to improve, having taken the diuretic mixture all the time, as also the cinchona bark with white wine, and an occasional purgative. His pulse, however, continued high, and varied from 100 to 126. On the 26th the fever increased, and the urine became more scanty; the face was more swelled than ever; the scrotum œdematous and shiny; pulse 140.

℞. *Calomelanos*, *Pulv. Jalapæ*, *aa.* gr. iv. *Pulv. Ipecacuanhæ*, gr. i. *M. Sumat statim.*

This was followed by a saline draught four hours afterwards. At night, although the medicine had operated, and seemed to give relief, yet by nine o'clock all the symptoms became worse. The scrotum was as large as two fists; skin dry and hot; pulse 150. Six ounces of blood were drawn from the arm; four grains of Dover's powder were directed to be given every fourth hour; and the scrotum and other dropsical swellings were ordered to be rubbed with camphor liniment. At this period the parents of the child had lost all hopes of his recovery, but were most anxious to do everything for him that was ordered. Although languid after the blood-letting he seemed easier. In half an hour afterwards the pulse was 140, and the heart's action seemed more free.

27th, A wonderful change for the better had taken place on this little patient since the previous night. He passed a tranquil night, and about seven o'clock was asking for food. His skin, although soft to the touch, was not moist; he had voided a considerable quantity of urine; the swelling of the face, hands, and feet had fallen. The scrotum was much the same; he had a stool this morning pretty natural in appearance; pulse 110. The blood taken last night exhibited a thick buffy coat on the top this morning; the crassamentum firm, cupped, and contracted to very small bulk, as compared with the quantity of serum, which was of a yellow colour.

The Dover's powders twice a-day were continued, and lemonade with supercarbonate of soda was ordered for drink.

28th, He is much better to-day; urine and stools pretty natural; scrotum much less in size; pulse 100. From this time he improved every day, and by the 1st of April was able to walk across the room.

The above little boy had a brother about two years old, who, when I was first called to them, was similarly affected with himself, but was not so much reduced in strength, neither had he so much fever. His urine and stools were as dark, however, and he had dropsical swellings of the skin in different parts. By the use of diuretics and purgatives he got well in a few day.

I have seen three or four other cases where dropsical swellings of the skin came on after slight attacks of scarlet fever, attended also with fever, but they yielded easily to cinchona bark in combination with nitre, giving along with these occasional purgatives.

A difference of opinion has prevailed with respect to the treatment of this kind of dropsy following scarlatina, some recommending blood-letting, while others prescribe tonics. In a case like that of the boy Boyd, when all the symptoms yielded to the diuretics and purgatives, and when it is considered that he was twice convalescent, it is difficult to say whether earlier blood-letting might have been of advantage. He had no pain in any part of his body; no inflammatory symptoms further than the increased arterial action; his brother's urine was nearly as dark-coloured as his own, and they had both dropsical swellings. The chief difference between the two cases was, that the eldest boy had from the first a much greater degree of fever than the other. Where there is much arterial action in connection with the œdema, and when this continues after the other symptoms have abated, I believe it will be safe and beneficial to abstract blood; and further, if the dropsy does not yield to other means, I would advise blood-letting in every case where the fever runs high.

In the first case noticed in this paper, that of J. S., we have a striking proof of the benefit to be derived from the cold affusion. Every time it was applied it lowered the pulse about 30 in the minute, and the patient was comparatively easy for a couple of hours afterwards. I saw another case where the same effect was produced; but great caution should be observed in the use of this remedy. If, for example, it were employed where there is any diaphoresis, and where the eruption does not come freely out, it would in my opinion send it in, and produce much mischief. It is a powerful auxiliary when skilfully used, but would become a dangerous enemy if improperly employed.

It appears to me that in every stage of scarlatina, the frequent use of acidulated gargles is of the greatest consequence, and that, until after their use, purgatives should in no case be administered. The disease originates in the throat and fauces; it is, therefore, evident, that, if the morbific secretion is carried from thence into the alimentary canal, it will be diffused through the circulating system, and thus add greatly to the violence of the attack. The constant use of gargles has this advantage also, that it prevents any irritating matter from lodging in the ulcers, and thereby causing their extension and consequent sloughing.

I have not seen any of the cases that have terminated fatally, otherwise I would have inquired into the morbid appearances after death.

Cupar Fife, 12*th June* 1839.

ART. XI.—*Some account of the Tubercular form of Elephantiasis, as it presents itself in the Island of Ceylon.* By THOMAS B. PEACOCK, House-Surgeon of the Chester Infirmary.

DURING two visits which I have paid to Ceylon I have each time inspected the hospital for the reception of the cases of elephantiasis, first in company with Dr Young of the Ceylon Rifles, and on the second occasion, by the kindness of my friend Dr Kinnis, alone, in order that I might be able to devote more time to the observation of the cases than can generally be afforded when in company. It is the result of these visits which I purpose to embody in this paper.

The Leper Hospital is situated on the northern bank of the Kalany, opposite to the village of Mootwall, and distant about four miles from Colombo. It commands a fine view of the river, which here is about a quarter of a mile broad,—bordered by cocoa nut gardens, and broken by numerous small jungle-covered islands, with the anchorage of Colombo in the distance.

The building consists of a centre, surrounded by an open verandah, the residence of the medical sub-assistant having charge of it, and two long wings devoted to the reception of the patients. To them the entrance is through an old-fashioned gate, surmounted by the arms of the Dutch East India Company, from which two small doors communicate respectively with the men's and women's side of the establishment. These are two square plots of grass, having the wards built on one side, while the other opens into an extensive garden. The wards are lofty and of one story, neatly white-washed and paved with brick.

In speaking of elephantiasis it is necessary that I should explain, that it is to the tubercular form of the disease, or that described by most authors under the name of elephantiasis of the Greeks, or more popularly of Leontiasis, to which my remarks are intended to apply,—a disease very distinct from the Barbadoes Leg, the *Bucnemia Tropica* of Good, or the *Elephantiasis Arabum* of other authors, though both prevail in the same localities, and are often, unless I am mistaken, found coexistent. The cases, then, of tubercular elephantiasis of which I possess notes are twelve in number,—these forming the most remarkable examples of the disease in the hospital at the time of my visits. Its inmates, in all forty-five, being composed by no means entirely of these cases, but including eight insane patients; two labouring under phagedenic sores, and several other cases of disease. Of the twelve referred to all were males; one had been in the hospital since 1802, and another, who had also been long there, died in the interval between my first and second visit. Their ages ranged from 25 to upwards of 50; one had suffered under the disease for upwards of 40 years, another 30, and others 10, 9, 8, 7, and one only 5 years. Dr Ainslie has stated that the disease generally begins between the ages of 20 and 30, and rarely after 40. Those whom I examined were first attacked by it at the ages of 30, 22, and 19, two at 17, one at 16, and one at 14; yet, as my inquiries were carried on through the medium of an interpreter, these dates cannot be altogether depended upon. One of the men was descended from Creole parents, and two were the sons of European fathers by native women; the rest were of the lower class of Singhalese; several had served as soldiers in the native corps.

From the histories given me of the mode of attack and progress of the disease in their several cases, it would appear that the limbs are generally first affected, more especially the small toes. It usually commences as a small pimple, differing little in colour from the parts around. Several, however, said it was whitish, and some that it felt hard. The patch loses its sensibility, and becomes covered with a furfuraceous scale, which, separating, leaves underneath it a point of spreading ulceration, secreting a kind of ichor. The disease having thus commenced, proceeds to a greater or less extent, and then heals, leaving behind it a hard, thick, and irregular cicatrix. In some cases it would appear as if the diseased action had there exhausted itself, the part undergoing no further change, while it would reappear after a variable interval elsewhere; a course which was stated to have generally been followed where it first manifested itself in some other part than the face or extremities. In other cases, after having remained healed for months, perhaps years, the ulceration would return in the same situation with renewed energy. As the disease advances the adjacent parts become hard, lobulated, and fissured; sensibility is extensively impaired; and numerous hard tubercles with ulcerated apices make their appearance. In a while the ulceration implicates the joints; the joints become denuded and separate, till, by a continued process of healing and spreading, the victim gradually sinks under the load of disease. Long, however, before it has attained this extent, the distant parts have assumed the same action. If the extremities have been first attacked, the tubercles have begun to develope themselves on the face; if the latter organ had first fallen under the disease, the extremities have already suffered from it.

In its more advanced stages the deformity occasioned is often most frightful. In the face the *alæ nasi* fall in; the septum gives way; the extremity of the nose becomes a mass of tubercles; the lips are tumid and knotty; the lobes of the ears enlarged and fissured; and the eyebrows, thickened and frowning, are studded with small nodes. Nor do the mucous membranes escape. The tongue and inside of the cheeks become thickened and lobulated, and the nostrils discharge a fetid secretion in a still worse state. The features are altogether distorted. The eyelids, tumid and irregular, become useless as a protection to the globe, and, pressing on the conjunctiva, cause it to inflame and ulcerate. The cornea becomes opaque, or, the parts sloughing, the organ collapses. Several had lost their sight from this cause; and one presented the most aggravated example of staphyloma I have seen.

In the limbs the ulceration removes the phalanges of the fingers and toes. Almost all the persons I examined had lost one or more of the small bones; and the man who had so long been a patient in the hospital had not, I think, one toe or finger which had not suffered in this way. In some the tarsal or carpal bones are affected; and in one, in which the general form of the foot was retained, and the bone of but one toe had been lost, the tarsal bones had ulcerated their way out, and left the instep soft and flexible in all directions. Much difference has existed amongst authors as to the existence of the glandular swellings in these cases. In one man, where the chief seat of the disease was in the face, the submaxillary and cervical glands were hard and swollen. And in another, where the extremities were chiefly affected, tumours existed in each groin, that on the right side being the largest, and ulcerated at several points. Both were extremely hard. No bands of absorbents could be detected. In the early stage I mentioned the impairment of the sensibility in the part affected. As the disease advances, however, the loss of sensation becomes entire; the patient will bear to be pricked with a sharp instrument without any complaint of pain; and in one person the conjunctiva on the eyeball was rendered perfectly insensible. In regard to this symptom we also find very contradictory statements amongst writers. Robinson has described two varieties of the disease, one of which is characterized by its presence, while in the other it is absent. Dr Ainslie, on the contrary, states, that he has never seen any case in which it has not been combined with the other symptoms; a statement which completely corresponds with my observations, though in some instances the degree to which it existed was much greater than in others. Once or twice I noticed it attended with partial paralysis of the motor power, as the tongue being drawn to one side, or the dropping of one arm.

While the local disease is committing the ravages I have described, the patient rapidly loses flesh, and the appetite to supply the deficiency becomes voracious. Seldom have I seen emaciation to an equal degree in any disease of this climate. Indeed, as some of the miserable victims are seen lying under the shade of the verandahs to gasp a little pure air instead of the foul atmosphere of their wards, with their limbs drawn up to their bodies, and their whole frame dwindled into the smallest space; it required some effort to believe that the wretched form was still possessed of life; yet so keenly do they cling to existence, that several times did I see nails springing from the second, nay even from the first phalanx of their fingers, where the others had respectively fallen by the extension of the malady. With regard to the state of the sexual power, writers have given accounts as contradictory as on some other parts of the pathology of the disease. On the one hand, we are informed that it becomes greatly impaired or entirely lost; on the other, that it exists to an unusual degree. Here, too, I must concur in the report of Dr Ainslie, who describes the loss of power and wasting of the testicles as of invariable occurrence in the latter stages,—a remark fully borne out by my observations at the Leper Hospital of Colombo. In some cases those glands could scarcely be detected, and there was an almost entire absence of hair from the chin and pubes; and in the young man, then 25 years of age, who had been attacked with the disease before he was 14, the signs of puberty had not developed themselves.

In other cases, however, where the disease had been of much shorter duration, the attendant gave me to understand that the sexual feeling was certainly not impaired.

It would not be expected that, where so frightful a malady is preying upon the constitution, the mind should maintain itself unaffected amidst the ruin. We find, indeed, that, early in the progress of the disease, its powers begin to decline; in the early stage its victims are suspicious, fretful, and discontented, dissatisfied with those around them, and a burden to themselves. They are continually involved in quarrels with each other, and their attendants, while in the latter periods of the malady they sink into the feebleness of a second childhood, or into a gloomy fatuity.

The object which I have planned for myself in this paper, of recording only what came under my own observation, will force me to pass very cursorily over two most interesting portions of the pathology of the disease. I refer to the symptoms ushering in the first appearance of the malady,—a period of the more importance in the circumstance, that then only will attempts at treatment probably be of any avail; and to the morbid appearances observed in the bodies of those in whom it proved fatal in regard to the first.

I find on referring to my notes, that in only two cases did I elicit any information on the former point, and these only under the obscure name of fever; indeed, when we recollect the length of time which had elapsed since the occurrence of the malady, it is obvious that any account furnished by the patients themselves of this stage must have been most uncertain.

On the morbid appearances found after death, my information is still more defective. The patients dying of this disease in the Colombo hospital, have not, I believe, been generally examined; and Dr Kinnis, whose paper on the disease as it fell under his observation at Mauritius, published in a previous volume of this Journal, is the best I have seen, and leaves little to add, informs me that the persons labouring under the severe forms of the malady are sent thence to the Island of Diego Garcia, thus preventing his investigating this portion of its pathology.

Having now given a hasty sketch of the disease, and endeavoured to describe the forms which it generally assumes, for indeed its phases are as various as are its individual examples, it remains for me to offer a few remarks on the causes to which it is to be ascribed. On turning over the pages of the different authors on this subject, their statements are found to be so varied and often so contradictory, that it is difficult to know which party to follow. Some have asserted that it is contagious, and most that it is hereditary, or at least that it is more likely to appear in children born after their parents have suffered from the disease than in others. Good regards these facts as so well established, that he has introduced them into his definition of the disease, and states that the Hindu physicians concur in the belief of its contagion. I should feel unwilling, on the strength of a few days observation, to contradict the reports of those, who have had much better opportunities of investigation than myself; but, if I mistake not, the general answer to my inquiries in Ceylon was, that it was not there regarded as contagious, nor did I hear an instance of any attendants at the hospital having been attacked by it. With respect to its hereditary tendency, all but one of the twelve whom I examined, denied that any of their relations had suffered from the disease, and in his case that relation was an uncle. I am, therefore, inclined to doubt whether these causes operate to the extent which has been supposed, and to inquire how far the common sources of disease are equal to the production of so frightful and intractable a malady.

The first feature which presents itself in this investigation is the influence of heat and humidity. I am not aware that the disease ever presents itself except within or near the tropics, where the temperature is high and the transitions rapid. In Ceylon, the west coast is throughout only elevated a few feet above the sea; the rivers are almost closed at their mouths by high banks of sand, and form extensive basins, with low marshy banks, teeming with vegetation. During the rainy season the rain falls in torrents, with short intervals, in which the clouds roll off, and the sky is left murky and thick; the rivers, incapable of quickly emptying themselves, overflow their banks, and leave extensive marshes to dry on the return of fine weather. The temperature ranges from 80 to 82 and 84 at noon, while at night it often falls to 60 with great feeling of cold. We have here, therefore, a most fruitful source of malaria; and if to Europeans, possessed of every protection against disease, the climate be healthier than that of almost any other portion of the tropics, we cannot be surprised that the natives, living as they do in wretched hovels covered with cocoa nut leaves; devoid of almost all clothing; supporting life on an innutritious diet of rice and plantains, and in many instances indulging to excess in spirits, should fall into a cachectic state of system, forming a nidus, in which a disease, more hideous than any known in the more favoured regions of the globe, should develope itself.

High temperature and sudden changes are not, however, alone sufficient to give rise to the disease, since I am not aware that it is common in the interior either of India or of Ceylon. At least during three weeks which I spent in the Kandyan territory, I do not recollect to have seen a single instance of it; yet, amongst the mountains of Ceylon, the transitions are both greater and more rapid; thus at Newera Ellya, a convalescent station 6000 feet above the level of the sea, where I spent ten days, we had, with a nearly vertical sun, a temperature of 76° to 78° at mid-day, falling rapidly at sunset, and being 35°, 32°, and 30° at sunrise; yet the diseases from which the natives suffer are entirely inflammatory affections of the chest, and the European troops wear the healthy hue of men fresh from home.

High temperature, therefore, and rapid transitions will not give rise to the disease. The determining influence I am inclined to regard as rather of a moral nature. The coast district of Ceylon has for ages been under foreign dominion; latterly the Portuguese, Dutch, and British have severally held it in subjection. Its inhabitants must be regarded as a general mixture of races; and when we consider the low social and moral condition of a people so constituted, in which the just relations of husband and wife, of parent and child, are almost unknown, we have, I think, an ample source for the developement of the evil. It is to the absence of this influence, I conceive, that the Kandyan inhabiting the mountain district of Ceylon,—clothed and housed scarcely better than the native of the coast district,—living on food as innutritious, and exposed to transition of temperature still greater, yet possessing many of the virtues of a mountain race, active, temperate, and industrious, is free from the scourge to which his feebler and more degenerate neighbour too frequently falls a victim.

In conclusion, I must as briefly refer to the treatment of this complaint as I have before necessarily done to several other of its features. The Leper Hospital at Colombo seems to be chiefly intended as an asylum for the indigent and diseased. The insane, the distinctly syphilitic, persons with aggravated forms of the Barbadoes leg, and those labouring under elephantiasis, are alike lodged within its wards, though without hopes of their being benefited by treatment. If, indeed, in the latter disease, medical means were ever likely to be of any avail, I am inclined to think, it would only be at the time of the invasion of the symptoms, or in the variable interval which elapses between their first attack and recurrence. At this period, however, they take only some feeble herbal medicines, such as are generally prescribed by the native doctors, and only come under the care of European medical men, when the disease is fully established, and when it is, I fear, ever likely to form one of the *opprobria medicinæ.*

ART. XII.—*Remarks on the Ergot of Rye.* By JOHN PATERSON, Surgeon, Aberdeen.

IN consequence of the very opposite opinions held by the most eminent accoucheurs, both in France and this country, as to the effects produced by the ergot of rye in difficult labours and uterine hemorrhage, I have been induced to trouble you with the result of my observations on this medicine, more with the view of obtaining information than from any thing new which I can bring forward on the subject. For some years I have paid particular attention to its action on the uterus, anticipating with pleasure that a time might come when it would entirely supersede the use of the forceps. It is an instrument to which I never resort but with extreme reluctance; and I think that even the most expert operator, if possessed of a well regulated mind, cannot even handle it with any thing like agreeable feelings.

I have found the *Secale cornutum*, if properly administered, to be a most useful medicine; at same time, I shall always consider it a dangerous one, so long as its uninterrupted action on the uterus cannot be governed by any given dose of the medicine. In the great majority of lingering labours, when there is no rigidity of the *os uteri*, and when dilated, I would say to nearly the size of a crown piece, I consider the ergot more to be depended on, as to its particular effects on the uterus, than almost any other specific in the Pharmacopœia. I have never seen injury arise to the mother from the largest doses; but its effects on the child do not warrant me in bestowing on it the same encomiums to which some medical writers on this subject think it entitled. In eight cases where I used the medicine in half drachm doses, and closely watched its action, it fully answered my expectations, by acting strongly in less than five minutes after it was administered; and I will venture to say that, if properly used, given in proper doses, and the medicine fresh, (which it very seldom is,) it never will disappoint the medical attendant as to its stimulating effects. In every one of these cases, there was in the symptoms produced a uniformity very surprising;—all the patients expressed their feelings in the same language, viz. that they never felt themselves in a similar state as their pains were never away. Could the action, therefore, of this medicine be in any way regulated by the accoucheur, I am satisfied, that, to a great extent, it would supersede the use of instruments; but until that can be accomplished, it has that great disadvantage, and will always require to be given with extreme caution. Out of these eight cases in which I used the ergot, I lost three children, than which no stronger evidence need be adduced of its extreme danger. In the works which I have read in reference to this medicine, I have been struck at finding so little allusion made to its bad effects upon the child,—very few instances being recorded of its fatal effects. In the three cases alluded to, I satisfied myself before its administration, that the children were not only alive, but apparently strong and healthy; but so soon as the action of the medicine commenced, these impressions gradually became less sensible to me and the mother. On these three occasions I regretted very much that no inspection was permitted. In two of them, in particular, the conjunctiva was literally gorged with blood; and I have little or no doubt that death was occasioned by the uninterrupted pressure of the uterus upon the brain. In that way, and by premature separation of the placenta before birth, produced by the same action, I doubt very much if more deaths are not occasioned than by the use of instruments; at least my experience leads me to that conclusion.

I have already mentioned, that I have not in a single instance found that injury has been done to the mother, thus giving the ergot, in one respect, a great advantage over the forceps; and it is a question which time and experience alone can decide, how far the one is to be preferred to the other. Like many useful and powerful agents, to be eminently useful, it only requires to be kept under control; and until some regulating power can be applied to its incessant action, though with me a great favourite in certain cases, I must always consider it both as uncertain and dangerous. I have observed that the separation of the placenta before the birth of the child, may in some cases be the cause of its death, and I am induced again to allude to this circumstance, from what I have found in cases where I was obliged to perform the disagreeable and dangerous operation of introducing the hand. In no such cases, in my opinion, will this be required, unless perhaps where fatal results are anticipated from profuse and sudden hemorrhage.

I am aware that there is little or nothing novel in these observations; my object being to draw the attention of the profession more strongly to the injurious effects produced by the medicine on the infant, and I do so from a thorough conviction that it has not as yet received that attention, or been treated with that degree of importance, to which my experience leads me to think it entitled. In one or two cases I tried the effect of opium during the violent action of this medicine; but in place of controlling or lessening its action, it had the effect of destroying it altogether. For the last twelve months I have, though with reluctance, returned to the use of the forceps in a case or two, where I am satisfied that the mother could have been speedily and safely relieved by a single dose of this medicine, had it not been for the fear I had of losing the child.

PART II.

CRITICAL ANALYSIS.

Art. I.—*A Practical Treatise on the Human Teeth; showing the causes of their Destruction, and the means of their Preservation.* By William Robertson. 2d Edition. London, 1839. Pp. 205, with six Plates.

In this practical treatise on the decay of the teeth, and the prevention of that decay, Mr Robertson comes prominently forward as the defender of the theory, that the teeth are not possessed of those properties which would entitle them to be classed as vital textures. He consequently ascribes the decay or caries of the teeth to the effects of a chemical agency, not of a vital process; and endeavours to prove that such is the case, by reference to the origin and progress of this disease in the tooth itself. This opinion is by no means new. Still it must be remarked, as a circumstance not a little singular, that, amidst the multitude of works on dental surgery, scarcely one should have adopted this view of the matter; but that, on the contrary, the proofs of the vitality of the teeth should have been taken for granted, or statements to this effect copied from one to another of these works, as a fact sanctioned by general belief. This, however, is the less astonishing when we reflect on the moderate attainments which are required of those who practise the art of the dentist.

As the vitality or non-vitality of the teeth is a subject of considerable interest, and as upon the determination of this point hinges the correct knowledge of the diseases to which these organs are liable, we shall take a short survey of the opinions of the various authors who have more especially directed their attention to the subject of the teeth. Mr Robertson, if we may judge from the few references he makes to previous writers, is apparently unacquainted with the works of many of the more celebrated anatomists and physiologists. His remarks seem confined solely to the works of Hunter, Fox, and Bell, to which should perhaps be added the article "Cranium," in Rees' Cyclopædia.

It appears to be unnecessary to go farther back than to the age of

Leeuwenhoek, one of the most accurate investigators of the last century, and whose splendid microscopical discoveries, after the slumber of more than a century, are apparently only now beginning to be appreciated. Leeuwenhoek was the first to describe accurately, and delineate, the appearance of the fibrous structure of the enamel, and also of the bony part of the tooth. He described the bony part as being composed of tubes, which extended from the internal cavity where the pulp was contained, to the outer surface of the tooth; imagined that the use of these tubes was to convey the nutritive fluid to the different parts of its bony structure; and that these bony canals or tubes probably ended in soft vessels, which would receive the fluid from them after its circulation there.* He consequently attributed caries, pain, and diseases of the teeth to an obstruction in the flow of the fluid in these small tubes,—a circumstance which he conceived could easily arise, if from any cause grosser particles were propelled towards or into them, as from their osseous structure they were incapable of dilatation or swelling.

Fauchard,† whose work contains a most minute account of the anatomy and formation of the teeth, and which may be read with interest even at the present day, arrives at very much the same conclusions as did Leeuwenhoek. He thought the teeth possessed a circulation through their osseous portion, and that nerves were also distributed through the same structures. He arrived at this conclusion from considering the diseases to which these organs were liable, and the pains to which they gave rise. He did not, however, allow his theory of the vascularity of the teeth to bias his judgment, for he distinctly assigns *two* causes, both of which lead to caries; first, an *internal* one, arising from a vitiated state of the humours of the body; and secondly, an *external* one, as blows or injuries, filing too deep, so as to open the internal cavity, alternations of heat and cold, certain aliments, and a vitiated or altered saliva.‡ In speaking of the local causes he says nothing of the vital action, but speaks of caries as being the result of a humour which insinuates itself between the osseous fibres of the teeth, and produces caries by destruction of the fibres; the displacement or faulty structure of these fibres allowing of this action of the humour.§ And again, in the next page, he distinctly mentions, that any injury which will permit of the lodgement of depraved saliva, aliments, or acrid substances, will lead to caries of the teeth. He states, however, his belief that, in most cases, caries is the result of a vital action, or rather of the want of it, from the stoppage of the circulation through the osseous portion of the teeth. He therefore cannot explain how filling with gold or lead the cavity which the caries has left, should be effectual in preserving the teeth, except it be that the caries had in that case resulted from external agencies, so that when the whole carious portions had been carefully removed, the surfaces which were left took on a healthy action in consequence of the operation, or of the stuffing put in contact with them.*

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* Opera Omnia. Aut. Antonio A. Leeuwenhoek. Vol. iv. Part 3, p. 5. 4to. Lugduni Batavorum, 1722.

† Le Chirurgien Dentiste, ou Traité des Dents. Par Pierre Fauchard. 2 toms. 12mo. Paris, 1746.

‡ Op. cit. Vol. i. p. 144.

§ Op. cit. Vol. i. p. 143.

The celebrated Dr Monro, *primus*,† also believed in the vascularity of the teeth, and ascribed their diseases to inflammatory action. He thought it was even possible to inject the supposed vessels of the teeth, and mentioned that in children he had "often injected the vessels of the teeth as far as their base;" and that in such teeth as "are not entirely ossified," the injection may be carried so far as to make the cortical part appear red. Hence, says he, "this plentiful supply of vessels must expose the teeth to the same disorders that attack other vascular parts, and such teeth as have the greatest number of vessels, must have the most numerous chances of being seized with these diseases."

Bourdet,‡ many of whose facts and statements are founded on those of Fauchard, agrees with him in opinion as to the vitality of the teeth, and attributes most of the diseases of these organs to the stoppage of the circulating fluid within the minuter vessels of the bony structure. He mentions, however, that the progress of caries is much hastened by vitiation of the humours, by acrid saliva, filled with corrosive salts, by slime being allowed to collect about the teeth till it has acquired more or less acridity, and by aliments which adhere to the interstices of the teeth and become corrupted. Bourdet mentions one circumstance which is rather in opposition to his statement that all the diseases of the teeth are to be ascribed to a vital action; viz. that when a tooth appears above the gum it is frequently found that all the upper portion has lost its enamel, or that only a few streaks of it remain, whilst the lower portion, or that next the neck of the tooth, is still covered with a beautiful healthy enamel. This he attributed to the corroding nature of the fluid in which the tooth was immersed during the formation of the upper portion of the enamel, a vitiation which might have resulted from small-pox, malignant fevers, measles, &c., but that the morbid state of the fluids had been corrected before the lower portion of the enamel was formed, so that when the tooth rose above the gum it presented the strange appearance above described.[*] To this same vitiation of the humours, and consequent fault in the organization of the teeth, he attributed the simultaneous decay of the corresponding teeth of opposite sides of the jaw, because they were formed at one time, and any general cause which affected the formation of the one would also do that of the other. "Hence," says he, "the teeth of those who have had serious illnesses during the time of their ossification are not only deformed and covered with asperities on their surface, but are the ones which very soon decay by caries.[†]

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* Fauchard, Vol. i. p. 148.

† The Anatomy of the Human Bones and Nerves. By Alexander Monro. 5th edition, 12mo. Edinburgh, 1750.

‡ Recherches et Observations sur toutes les parties de l'Art du Dentiste. Par M. Bourdet. 2 toms. 12mo. Paris, 1757.

Berdmore[‡] describes the teeth as vital, and plentifully supplied with blood-vessels and nerves, distributed all over them.

John Hunter, who next examined the subject, after the most patient investigations, drew the following cautious conclusions.—"From these experiments it would appear, that the teeth are to be considered as extraneous bodies, with respect to a circulation through their substance; but they have most certainly a living principle, by which means they make part of the body, and are capable of uniting with any part of a living body; and it is to be observed that affections of the whole body have less influence upon the teeth than any other part of the body."[§] Of the enamel, Mr Hunter remarked, that it "has no marks of being vascular, and of having a circulation of fluids; the most subtile injections can never reach it, it takes no tinge from feeding with madder, even in the youngest animals, and, when soaked in a gentle acid, there appears no gristly or fleshy part with which the earthy part has been incorporated."[‖]

When speaking of the bony part of the teeth, he mentions that the following considerations would seem to show that the teeth were not vascular. He never saw them injected in any preparation, nor could he ever succeed in injecting them either in young or old subjects. He was never able to trace any vessels going from the pulp into the substance of the new-formed tooth; and he remarked that whatever part of a tooth was formed, was always completely formed, which was not the case with other bones. What he conceived to be the most convincing proof, however, was, that if a young animal was fed with madder for some time, and then killed, those parts of the teeth which were formed during the period the animal was taking the madder, were found coloured, but no other parts of the teeth. But if the animal was allowed to live for a considerable time after taking the madder, and then killed, a layer of uncoloured tooth substance was found beneath the coloured layer, which still retained its original colour; so that some of the teeth were found to be alternately coloured red and white. From the dye not being removed, he inferred that the teeth were also without absorbents. He mentions also the difference between their formation and that of bone; and that they never change by age, nor seem to undergo any alteration after being completely formed, except from abrasion.

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[*] Bourdet, Vol. i. p. 81. [†] Op. cit. Vol. i. p. 96.

[‡] Treatise on the Disorders and Deformities of the Teeth and Gums. By Thomas Berdmore. 12mo. London, 1770. p. 13.

[§] The Natural History of the Human Teeth. By John Hunter. 4to. London, 1771. P. 39.

[‖] Op. cit. p. 34–5.

In mentioning the diseases of the teeth, he again adverts to the subject in the following words: "Nature seems, in some measure, to have considered the teeth as aliens, only giving them nourishment when sound and fit for service, but not allowing them, when diseased, the common benefits of that society in which they are placed. They cannot exfoliate, as no operations go on in them except growth; therefore, if any part is dead, the living has not the power of throwing it off, and forming an external surface capable of supporting itself like the other parts of the body." * From not believing in the vascular nature of the teeth, Mr Hunter found himself at a loss to account for the decay of the teeth, "as it begins most commonly externally, in a part where the teeth in their most sound state receive little or no nourishment." † Neither did he believe that caries arose from external injury, or from menstrua which might dissolve part of a tooth, as he thought such an agent would not act so partially. His only attempt at an explanation is, that the disease appeared to be chiefly in the tooth itself; and yet he seems to have been very doubtful of the fact, as it failed to explain, as he himself states, how the removal of the rotten part should put a stop to the further progress of the decay, at least for a time.

Plenck ‡ maintains the vascularity of the teeth, and believes that caries in many cases depends on a vital action; but he also allows that various external causes may produce the disease, as vitiated saliva, corrupted aliments adhering to the interstices of the teeth, fevers, vitiation of the humours of the body, &c.

Ruspini § held that the enamel and bony part were "not susceptible of the least sensation," but that a fluid circulated through them, and that one of the causes of caries was too great pressure of the other teeth on the vessels of the bony part, leading to their obstruction and destruction. He, however, also attributes caries

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* A Practical Treatise on the Diseases of the Teeth. By John Hunter. 4to. London, 1778. P. 12–13.

† Op. cit. p. 8.

‡ Doctrina de Morbis Dentium ac Gingivarum. Joseph. Jacob Plenck. 8vo. Viennæ, 1778.

§ Treatise on the Teeth. By Barth. Ruspini. London, N. D.

of the teeth to a vitiation of the fluids, to injuries, &c. and ascribes the erosion of the enamel to the same causes as those referred to by Bourdet. He admits, besides, that he cannot satisfactorily account for the original cause of caries.

Baron Cuvier,* in his Memoir on the Elephant, demonstrated the fact that there was not the most distant analogy between the structure of bone and that of teeth. He describes the osseous substance of the tooth as a transudation from the gelatinous pulp situate at the bottom of the dental capsule; and the enamel as a transudation from the internal surface of the capsule surrounding the pulp. He, however, notices the existence of a membrane between the enamel and the bony part of the tooth. After a very full examination of the structure and the formation of teeth, he arrives at the conclusion, that " the substances of which the teeth are composed are all formed by transudation, and in layers; that the internal substance of the tooth has no analogy with bone, otherwise than from its chemical composition being formed of gelatine and phosphate of lime; but that it resembles bone neither in its tissue, in its mode of formation, nor in its manner of growth. Its tissue has neither cellulosities nor fibres, but is composed of plates dove-tailed within one another. Those who suppose it to resemble diploe, and to have cells, give a very false idea of it. Teeth are not formed on a cartilaginous base which is successively penetrated by earthy molecules. They do not grow by a general and simultaneous developement of all their parts, and still preserve the same form. Lastly, they are neither penetrated by blood-vessels nor nerves. Those who have thought that the vessels of the pulp pass into the body of the tooth have been deceived; and still more those who have endeavoured to prove a passage of vessels from the periosteum of the alveolar cavity into the substance of the roots. Not the smallest fibril passes from the pulpy kernel into the osseous substance of the tooth; and this last is only connected with the rest of the body by a mechanical wedging. No part of a tooth is ever regenerated if once broken off; and if broken teeth again consolidate, it is only because the new layers forming in the interior become consolidated to the external layers, and thus unite them together."†

Cuvier also finds great fault with anatomists for giving the name of osseous substance to the bony structure of the teeth, and describing its formation as a process of ossification. He says it is confounding two things essentially different, and from styling it by a false name, has tended to mislead the dentist in practice.

He remarks that what is called caries is nothing more than the decomposition which the internal substance would undergo, even after it was no longer adherent to the living body, provided it remained exposed to the heat of the mouth, and to the action of the saliva and different aliments; but that it has no connection with the caries of bone. The disposition to decay of the teeth observable in some persons, he says, "depends on the substance of the teeth not being of a sound composition, and is connected with an unhealthy state of the pulp from which they were transuded. It is the same with the spots and softer layers which are occasionally observed in the thickness of certain teeth. These are the effects of passing indispositions of the pulp."* Pain and inflammation, he says, are alone dependent on the pulp, not on the hard portion of the teeth; and we need not be astonished that sensations should be communicated through so thick and hard a structure as the bony part of the teeth, seeing that the pulp of the teeth is, after the retina and the nervous pulp of the labyrinth of the ear, the most sensitive part of the body. In order to make intelligible from other structures, how sensations can be conveyed through solid bodies, he instances the labyrinth of the ear in fishes, to which the vibrations require to be conveyed through the bones of the skull.

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* Annales du Museum d'Histoire Naturelle. Art. Memoire sur les Elephans vivans et fossiles. Par. G. Cuvier, Tom. viii. Paris, 1806. Pp. 1–58, and 93–155.

† Op. cit. p. 100 and 101.

In his Comparative Anatomy he describes the teeth as an exudation from the vascular pulp;† and mentions as a further proof of their want of vascularity, the circumstance of feeding a young animal at intervals with madder colouring the parts of the teeth which had been in process of forming whilst the dye was giving; the teeth being found to present alternate streaks of white and red.

Blake‡ had no doubt as to the vascularity of the teeth, and maintained that they were supplied with blood-vessels, absorbents, and nerves. His chief argument, however, in favour of this vascularity, appeared to rest on the fact of the "progressive and continued growth of the incisors of the squirrel tribes;" a fact which admits of a very different explanation. His assertion of the teeth being provided with absorbents rests on a far worse foundation, for he asserts, but without any proof of the truth of his statement, that after a young animal has been fed with madder, and the teeth coloured by it, the colour will be removed from the tooth like as it is from the bones, by discontinuing the giving of that substance. He relates an experiment made by himself, which is intended to prove this point; but in truth it only confirms the previous statements of Hunter and Cuvier, and totally fails to prove the loss of colour after it has been once acquired.

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* An. du Mus. Tom. viii. p. 116.

† Leçons d'Anatomie Comparée de G. Cuvier. 5 vols. 8vo. Paris, 1800–1805, Vol. iii. p. 116.

‡ An Essay on the Structure and Formation of the Teeth in Man and various Animals. By Robert Blake. 8vo. Dublin, 1801.

Fox[*] was a strenuous advocate for the analogy of the teeth to bones. "The structure of the teeth," says he, "is similar to that of any other bone, and differs only in having a covering, which is called enamel, for the exposed surface, and in the bony part being more dense." He endeavoured to refute Hunter's arguments for the non-existence of an internal circulation in the teeth, but was unable to show that a single vessel entered the bony part from the pulp; he, however, asserted, that, as bones receive nourishment from vessels which enter into their substance, it might be "justly inferred, that the blood sent to the teeth affords a similar supply, as a considerable portion of animal matter enters into their composition."[†] And again, "if the teeth after their first formation received no supply from vessels, or did not require any nourishment, it would have been better if they had been destitute of an internal cavity, and of regular organization."[‡]

He maintains the same opinions in his work which he published three years afterwards on the diseases of the teeth.[§] His reasons for assuming that the teeth do not possess the power of exfoliation are singular. His words are,—"The teeth do not possess the power of exfoliation, it is not necessary they should, for the system suffers no injury from the loss of a tooth; *and no person would have sufficient patience to bear the pain, attending upon it, or wait the progress of so slow a process.*"

Caries of the teeth he ascribed to "an inflammation in the bone of the crown of the tooth, which, on account of its peculiar structure, terminates in mortification." This peculiarity of structure he elsewhere explains to mean density of structure, and from this circumstance takes occasion to show their striking similarity to bones; as when the dense structure of the long bones inflames, it is liable to end in death of the part, or in necrosis. But he also attributes caries of the teeth to inflammation of the vascular pulp, which, producing its separation from the bone of the tooth, deprives it of vitality, in the same manner as the separation of the periosteum leads to the death of the bone. He sums up all, however, by saying, that "the chief predisposition to this disease consists in a defective formation of either the enamel or the bony part of the teeth;" and that "this original defect in the structure of the teeth must depend on a want of healthy action in the pulps during the time of the formation of the teeth." The chief argument he urges in proof of this statement is, that the teeth "become decayed in pairs; that is, those teeth which are formed at the same time, being in a similar state of imperfection, have not the power to resist the causes of disease, and, therefore, nearly about the same period, they exhibit signs of decay, whilst those teeth which have been formed at another time, when a more healthy action has existed, have remained perfectly sound to the end of life."*

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[*] The Natural History of the Human Teeth. By Joseph Fox, 4to. London, 1803.

[†] Ibid. p. 33.

[‡] Ibid. p. 34.

[§] The History and Treatment of the Diseases of the Teeth, &c. By Joseph Fox, 4to. London, 1806.

To these causes of caries of the teeth, Mr Fox adds many more, to all of which he attributes a greater or lesser degree of influence. These are, various constitutional affections, dyspeptic disorders, continued fevers, animal diet, extremes of heat and of cold, acrimonious discharge from a decaying tooth, a crowded state of the teeth, want of cleanliness, and disease of the gums.

Gariot † maintained that the teeth were of the same structure as other bones, and that even the enamel comprehended in its structure a vascular tissue which rendered it equally organized as other bones, and permitted its enjoying all the properties of a vital part.‡ He, however, allowed that caries of the teeth resulted from various causes, both constitutional and local, from external agency and from internal disease. In his description of caries, he describes it distinctly as originating on the surface of the tooth, and extending inwards; and also that, if discovered early, when it is situate on the edge of a tooth, filing off the diseased portion will put a stop to the disease.

Dumas§ described the teeth as possessed of vascularity and sensation, "the vessels and nerves of the tooth being distributed to all their surface;" but as these become obliterated during life, and yet the teeth retain their vitality, he thought that their nutrition could not be owing exclusively to these vessels. One of his strongest arguments in favour of the vitality of the teeth was the circumstance, that if a tooth were extracted, and immediately replaced in its socket, it became again fixed, and apparently nourished as before.

But though he ascribes vitality to the teeth, he does not assert that they are *true* bones; he describes them only as belonging generally to the osseous system; for he says, "there are some remarkable differences between the intimate structure of teeth and that of other bones: 1. The teeth are not, like other bones, covered with a periosteum or external membrane; 2. They are composed of a close compact tissue, which has no analogy with the spongy structure of bone; 3. They contain a large quantity of the calcareous phosphates, but the gelatine by no means exists in the same proportion; the enamel being totally deprived of it; 4. The broken portions of a tooth do not unite, as those of a fractured bone, by means of a new osseous medium; 5. The blood-vessels and nerves are distributed differently from those of other bones.*

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* Fox, pp. 16 and 17.

† Traité des Maladies de la Bouche. Par. J. B. Gariot, 8vo. Paris, 1805.

‡ Op. cit. p. 40.

§ Principes de Physiologie. Par. Charles Louis Dumas, 2d ed. 4 vols, 8vo, Paris, 1806.

Blumenbach and his translator, Lawrence, † both agree as to the non-vitality of the teeth, which they consider as proved by the circumstance of balls and even spear heads having been found in the centre of the tusk of the elephant. Mr Lawrence, in a note appended to the chapter where this fact is mentioned, explains it by stating, that if the ivory of the tooth had been possessed of vital properties, it would, like other bones, have inflamed and suppurated; but instead of this the bony matter had continued to be secreted, and enclosed the foreign body. These foreign bodies must have pierced the part of the tusk which was close to the pulp, which, from being newly secreted, was still soft; so that the soft matter of the tusk would close over them, or the aperture by which they entered would be filled up with the same non-vascular products, and thus leave them imbedded in the new formation of ivory.

Blainville,‡ from the analogy of the structures which supply the place of teeth in the animal kingdom, leans to the belief of their being mere products, neither possessed of a circulation of fluids nor even of vitality, and only connected with organized parts in a mechanical manner. In birds, tortoises, whales, and the ornithorynchus, the analogy of the structure which supplies the place of teeth with the cuticular secretion, he considered to be pretty evident; but it is in insects that the analogy is the most complete; for in them the jaws are composed of true horn, in no way distinguishable from the other corneous structures of these animals.

Serres § held the teeth to be an organic product possessing neither vitality nor circulation of fluids; that in fact the tooth was an "exhalation" from the vascular pulp, and, anatomically speaking, inorganic; that the pulp was quite unconnected with the tooth, since between them there existed a peculiar exhalation; and that no nerves were distributed to the bony part of the teeth.

"Everything," says, he, "leads me to the belief that the proper tissue of the teeth is not the same as that of the bones. The comparisons of their properties may determine this: 1. The bones are in their developement preceded by a cartilaginous state; the teeth transude from the surface of the pulp, and have no intermediate state. 2. The bones are enveloped by a periosteum, which forms for them a kind of sheath; the teeth have none of this; the enamel appears to take the place of it externally. 3. The diseases which affect the osseous system in general, as rickets, which soften or destroy it, do not act on the teeth; this system remaining untouched amid the general ruins of the osseous system. 4. If we immerse in concentrated nitric acid the proper tissue of the teeth, and a part of the osseous system, and leave them there for a few hours, the first is not attacked, whilst the last is destroyed. 5. By calcination bone gives a white residue, of which phosphate of lime appears to be the base; tooth is by a stronger heat reduced to a bluish residue, the basis of which appears to contain more carbonate of lime. 6. Bone is more quickly destroyed under ground than teeth; in extra-uterine conceptions the bones are dissolved, whilst the teeth remain untouched. 7. Bone is penetrated by a multitude of vessels; the teeth have none. 8. The diseases of the bones and of the teeth do not offer the slightest analogy."[*]

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* Dumas, Vol. i. p. 229.

† A Short System of Comparative Anatomy, translated from the German of J. F. Blumenbach. By William Lawrence, 8vo. London, 1807.

‡ Nouveau Dictionnaire d'Histoire Naturelle, Art. Dents. Par M. de Blainville. Paris, 1817. Vol. ix.

§ Essai sur l'Anatomie et la Physiologie des Dents. Par. A. Serres, 8vo. Paris, 1817.

Delabarre, from having succeeded in tracing the membrane which forms the enamel, and which he describes with great minuteness,[†] argues that the teeth are possessed of a circulation, and of vitality, and traces all the diseases to which these organs are liable to vital processes. Hence he considers caries of the teeth to be nothing else than an ulcer of the bony structure. Atrophy he regards as the result of a vicious nutrition, or developement of the minute exhalent tubes which form the enamel, or to the accidental destruction of some of the crystals of enamel which had been originally well formed. Erosion, again, he attributes to a destruction of the enamel after its formation; the result of the corroding action of the fluid within which the tooth is developed. He also notices the fact, that erosion of the teeth likewise takes place in adults in the course of particular diseases, during which the secretions of the mouth become vitiated, and so changed in quality that they act upon the teeth.

Duval[‡] maintains that the teeth are vital organs, because they appear above the gum in consequence of a vital process, and are attached to the alveolar cavity by certain fibres; and he compares their rise above the gum to the germination of a seed. He says that the solid parts of the teeth are plentifully supplied with blood-vessels and nerves, and that many of the diseases to which the teeth are liable are the results of vital action. Though he regards caries as the result of constitutional derangement, and recommends general remedies for its cure, he strongly insists on the necessity of removing all the carious portion with the file, if situated on the side of the tooth, " even to the half of the tooth," to prevent its destroying the remaining portion.

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[*] Serres, pp. 45, 46, 47.

[†] Traité de la Seconde Dentition. Par C. F. Delabarre. 8vo. Paris, 1819. P. 18.

[‡] Dentiste de la Jeunesse. Par J. F. Duval. Translated by J. Atkinson. 8vo, London, 1820.

Frederic Cuvier [*] finds fault with his brother for saying that there is no analogy between the teeth and bones; as he thinks there is certainly a stronger analogy between these than between teeth and hair or nails, seeing that neither in physical nor chemical properties, do these last resemble each other, the sole analogy being that both project from the same dermoid tissue. Their analogy with bones he considers to be stronger, as both have a base of gelatine in which is deposited a chalky substance. He agrees with the Baron, however, in this, that they are " dead in one sense, as they are deprived of vessels, and having no nerves are destitute of sensation."[†] He describes the teeth as composed of a secreting organ, and of an excreted body, which last is formed of a greater or lesser number of substances, is destitute of vessels or nerves, and deprived of all immediate and necessary connection with other organs. He mentions, however, that the " roots of the teeth are vascular, since they are pierced in all their length by the vessels and nerves which formed them, and which are continuous with those of the pulps on one side, and with the maxillary nerves and blood-vessels on the other."[‡] He also notices the circumstance, that teeth with roots do not grow as they are worn down, but that in the whole family of the Rodentia, the incisors, being unprovided with roots, grow during the life of the animal.

Mr Thomas Bell, [§] espousing the views of other dentists, maintains the vitality of the teeth, and their analogy with bone. " That the teeth possess vitality," says he, " that they are connected by their organization with the general system, having nerves, blood-vessels, and absorbents, and are analogous in this respect to other bones, is a truth so strongly attested by all the phenomena they present, whether in a healthy or in a diseased state, that it is difficult to imagine upon what grounds it can have been controverted, or even doubted, by any one whose opinions are deduced from observation or experiment." He asserts that the membrane of the pulp supplies the place of a periosteum to the teeth, and as a slight degree of force is required to separate these from each other, that vessels, &c. must pass from the one to the other, and he thinks this is quite sufficient to justify him in considering the "connection as identical with that which exists between the bones and their periosteum." He consequently describes the membrane of the pulp as "a production of the periosteum of the alveolus." He endeavours to explain away the facts stated by Hunter as conclusive against their vascularity; and as an additional argument, which he intends should carry conviction into every mind, mentions, that where a tooth had been extracted on account of violent "pain and inflammation," and immediately broken, he has found "distinct red patches in the very substance of the bone." He also says that he has in his possession "a set of teeth from the head of a young woman who died of jaundice, every one of which is deeply tinged with a bright yellow colour;" and the teeth of persons who have been hanged or drowned often present a deep red tinge. These facts, he is of opinion, convincingly prove the vascularity of the teeth. His arguments for the existence of nerves in the substance of the teeth are, that the filing of a tooth causes pain, and that if the gum and "the edge of the alveolar process" recede from the neck of the tooth in consequence of the use of mercury, scratching the tooth with a steel instrument causes pain. His arguments for the presence of absorbents in the teeth are much the same as those adduced to prove the vascularity and the sensibility of the teeth. He first endeavours to throw doubts on Hunter's experiments on feeding animals with madder, and then relates a case of what he calls "true abscess in the bone of a tooth." "Inflammation," says he, "had existed for a considerable time, and after extraction, or sawing the tooth through for the purpose of ascertaining the state of the internal structure, I found a cavity formed in the very substance of the tooth, communicating with the natural cavity, and filled with pus."

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[*] Des Dents des Mammifères considérées comme Caractères Zoologiques. Par F. Cuvier. 8vo. Strasbourg, 1825.

[†] Op. cit. p. xviii. [‡] Op. cit. p. xxxii.

[§] The Anatomy, Physiology, and Diseases of the Teeth. By Thomas Bell. 8vo. London, 1829.

Maintaining the analogy of the teeth with bones, he finds fault with all previous writers calling decay of the teeth by the name of *caries*, asserting that it ought to be named *gangrene*, as it is the death of part of the osseous texture in consequence of inflammation. Mr Bell's term, however, appears to be as inappropriate as the former, seeing that the term gangrene is usually limited to the destruction of the softer parts, whilst death of bone is termed *necrosis*. "The true proximate cause of dental gangrene is inflammation," says Mr Bell; and he maintains that the bony structure of the teeth is liable to inflammation, but without giving satisfactory proof that such is the case. He imagined that the organization of the tooth was less perfect in those parts farthest removed from the pulp, and that these parts were in consequence less capable of resisting the progress of inflammation and gangrene. In this way he accounts for the fact of decay proceeding from without inwards; and though he finds nothing analogous to this in bone, he endeavours to explain it in the following manner;—"When a portion of any of the other bones loses its vitality, it acts as an extraneous body, producing irritation in the surrounding parts, and a process of absorption is set up in a line of living bone in contact with it, in order to effect its separation. A similar effort appears to be made in gangrene of the teeth, but with a very different result, in accordance with the difference in the structure of the two seats of the disease. When a portion of a tooth is killed by inflammation, it excites, as in the other case, an increased action in the vessels of the surrounding portion of bone; but that very action, which, in such bones as possess greater vital power, becomes remedial by promoting the removal of the cause of irritation, produces in the present case the continued extension of the disease; for the irritation thus excited, instead of effecting the removal of the part by absorption, as in other necrosed bones, at once destroys its vitality, and renders it only an additional portion of dead matter to that which had already existed. This in its turn becomes an extraneous and irritating body to the surrounding bone, in which the same action is set up, and the same mortification produced, and thus portion after portion is successively irritated and killed, until the whole crown of the tooth is destroyed."*

Mr Jobson,† whose work is founded on that of Mr Bell, maintains much the same views. He thinks the teeth "resemble the bones more than any other structure of the body, both in their chemical composition and general structure; being like those formed by the union of gelatinous matter with an earthy base; and supplied with blood-vessels, nerves, and absorbents, from the two first of which they derive their vitality and powers of sensation, and, by means of the last, have their substance removed when it is no longer requisite, as in the case of the absorption of the roots of the first set of teeth, to make way for the bodies of those of the second. Further than this the resemblance does not extend; the enamel of the teeth is totally different from any other animal substance, and might alone entitle them to be considered as a *homogeneous* structure."‡ He follows Mr Bell also in quoting Hunter's proofs of the non-vascularity of the teeth, in order that he may disprove them; but he only shows his ignorance of the researches of previous investigators, when he asserts that "all the best authors who, since his (Hunter's) time, have written on the subject, believe that the teeth are possessed of organization, though not perhaps of so high an order as the other parts of the osseous system." By organization he here means vitality, or vascularity, as he explains in a foot-note, and also in the context.

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* Bell, p. i. 26.

† Outlines of the Anatomy and Physiology of the Teeth. By David Wemyss Jobson. 8vo. Edinburgh, 1834.

‡ Ibid. p. 18.

Mr Jobson also adopts Mr Bell's views of caries, and describes the disease in very similar words, attributing it to inflammation of a portion of the bony structure of the teeth next the enamel. He, however, notices one circumstance, which he does not endeavour to explain, although it is hostile to the theory of the teeth being of the same nature as bone; it is this, that, "contrary to that law which holds good in every other part of the body in which every diseased structure is observed to have a tendency to extend towards the surface, caries of the teeth almost always proceeds in an inward direction."

Cruveilhier,* one of the latest writers who has described the anatomical relations of teeth, considers them as "ossiform *concretions*," possessed neither of vascularity nor vitality.

"The teeth are not bones, although they have an apparent analogy with them, which has for a long time made them be regarded as true bones. They differ in many respects. 1. In position. The teeth are naked and visible externally; whilst bones, and this is a very important character, are covered with a periosteum. 2. In their anatomical relation. The teeth are composed of a bulb or large papilla, surrounded by a calcareous case, which is composed of two substances, enamel and ivory. This calcareous case is *not* pierced with vessels, and no traces of cellular tissue are discovered in it. 3. In their developement. In them, in fact, the formation of the hard or ossiform substance takes place in successive layers from the circumference to the centre; whilst in bones the developement goes on in an opposite direction. The teeth are entire strangers to the nutrition movements which take place in bones. Besides, the teeth present a renewing, which constitutes the second dentition, which does not correspond to any analogous phenomenon in the developement of bones. 4. In their physiological relations. The teeth present yet more important differential characters. They are not subject to the diseases of the bones; they are only susceptible of chemical and physical alterations; they have not, as the bones have, a duration equal to the life of the individual. 5. In their chemical composition. A much greater number of salts enter into their composition; and the enamel contains no gelatine.

"From this it is apparent that they are not bones. Let us now establish that they belong to the epidermic tissue, and that they are analogous to the nails and hair.

"1. Examined in the lower animals, they constitute an uninterrupted series from those which resemble horn and nails till they arrive at their most perfect osseous character. 2. They present a lamellar texture like nails and hair, a texture very manifest in some animals, but rendered obscure in others by the deposition of calcareous salts. 3. Their mode of developement is similar to that of nails or hair. 4. Like them they are deprived of nutritive phenomena; they are formed layer by layer, and are not subject to a renewal of the substance which constitutes them; they are produced by transudation; they are inorganic bodies. 5. and *lastly*, According to the opinion of Geoffroy St Hilaire, the bills of birds, which are evidently corneous productions, are related to the dental formations."*

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* Anatomie Descriptive. Par J. Cruveilhier. 4 vols. 8vo. Paris, 1834–36.

Mr Robertson, whose practical treatise has called forth these observations, is decidedly opposed to those who consider the bone of the teeth to possess vessels and nerves, and to be endowed with vitality. Loss of substance occasioned by the friction of mastication, he observes, is not repaired; a part broken off is never renewed; a hole occasioned by decay is never again filled up. A violent blow on a tooth will occasion a general discoloration from effusion of blood throughout its texture, which never goes off; the effused blood having mechanically discoloured the substance of the tooth. Teeth are exempt from those diseases which affect the bony structures of the body; *lues venerea*, scrofula, and rickets never affecting these structures. They also differ materially in their mode of formation from that of bone.

Mr Robertson, also, from a close examination of the diseases of the teeth, particularly of caries, arrives at the same conclusion. He describes minutely the commencement of the disease on the outer surface of the tooth in some crevice or fissure, or other part where matters might lodge. It is invariably in such a situation that the first symptoms of caries are manifested. This is in general recognized as a brown discoloration, which is in the grinders always confined to one of the deepest indentations. As the action proceeds the bottom of the indentation becomes black and corroded, and soon afterwards a small opening may be discovered through the enamel. When the process of decay reaches the bony structure it proceeds with great rapidity, whilst the aperture in the enamel continues small on account of its denser texture. No pain is felt all this time, nor till the decay has proceeded so far as to lay open the internal cavity of the tooth.

Again, if the decay commences in the sides of the teeth, which is a very common occurrence, it generally takes place on their lateral edge, where they come in contact with each other, but diverge from each other so far towards the gum as to allow of portions of food being intercepted in that place. If one of these teeth should have a neck or depression it will proceed more rapidly to decay. Mr Robertson mentions, as a further proof that decay commences externally, that he has removed with a file the discoloured portion of the enamel without penetrating through its whole thickness. He maintains that caries is therefore a truly chemical process, and that it results from portions of food being retained in the fissures, or deep sinuosities, or interstices between the teeth, where they become corrupted, and act chemically on the enamel. His first three plates exhibit this peculiarity in the structure of the teeth. One of the best proofs which he adduces of the truth of his statement is the universal practice of dentists, which they have been led to adopt from experience, of removing the dead portions of the teeth, and filling the cavity with gold leaf, or, if the disease be situated on the side of the tooth, of filing it away so as to leave none of the dead portions behind; both of which practices he holds prove that the disease did not depend on a vital process, but a chemical one. If, as Bell supposed, the disease depended on inflammation which was constantly kept up by the presence of the dead portion—how, he asks, does it happen that gold, a foreign body, does not excite the same action? or how could filing away the decayed portion put a stop to inflammatory action? But if it be admitted that the disease be produced by a chemical agency the theory and practice agree. Prevent matter lodging, and the teeth are saved. Filling the hollow cavity does this, and filing off the diseased edge does the same.

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* Cruveilhier, Vol. i. pp. 500–501.

Mr Robertson considers the proximate cause of the decay to be defective formation of the enamel, " for," says he, " if the different sections of this substance be not closely united upon the surface of the tooth, pits and fissures will present themselves, calculated to retain particles of food." He shows that if Mr Bell's theory were correct, decay ought to commence in the cutting edge of the teeth, which it never does, but is always found to begin in the depressions or fissures where matters could lodge, and gradually work its way inwards. He thinks this easily explains why the grinders should always be most subject to decay, the numerous fissures or depressions on their surface rendering them more liable than the others.

Mr Robertson adds one fact more, which may be almost considered conclusive as to caries being the result of chemical agency. He remarks that if the crown of a tooth be, through accident or decay, broken off, and an artificial tooth be fixed on the fang in the usual manner, if the slightest crevice or interval be allowed to exist between the grafted crown and the fang, so that particles of food may lodge, " a process of caries will commence in the extraneous tooth, exactly like that which takes place in the teeth naturally contained in the jaw."—P. 59.

More than a century has elapsed since Leeuwenhoek discovered the tubular structure of the fibres of the teeth, and till the late researches of Purkinje, Müller, and Retzius,[*] there is scarcely a recorded observation of this fact having ever been verified. From the improvements in the structure of the microscope, these last named authors have been able to carry their researches much further than Leeuwenhoek. They found that the ivory of the teeth was composed of a structureless substance and of minute tubes. These tubes were not empty, as they would have been had they admitted of a circulation of fluid through them, but were filled with granules of calcareous substance, apparently similar to the structureless mass through which the tubes ran. The enamel they found to consist of solid hexagonal prisms, whilst the substance, which has been called *crusta petrosa*, cement, or cortical substance, was found to be composed of a congeries of tubes communicating with each other, and with larger cells distributed through its substance. Professor Owen of London has, more lately, from his own investigations, arrived at similar results.[†]

Retzius endeavoured to explain the use of this peculiar structure of the teeth, by supposing that it allowed the substance of the organ to be penetrated by the fluid secreted by the dental germ, and by the membrane surrounding the roots, which, without circulating in organic canals, may, he thinks, aid in preserving the teeth. He, however, in all cases, describes the substance of the teeth as a "secretion :" and admits that no organic changes take place in them after their formation.

In taking a general view of the recorded facts for and against the vitality of the teeth, the weight of evidence seems to be in favour of their not possessing the properties of vital organs.

At no period of the formation of the teeth can the ivory or enamel be injected; when these parts are once formed, they undergo no further changes. No communicating vessels or nerves have ever been shown to pass between the formative pulp and the secreted ivory; but, on the other hand, Cuvier, Cruveilhier, &c. have shown that there is a halitus or kind of exhalation between the pulp and the ivory walls of the tooth; a fact subsequently confirmed by Retzius, who thought this halitus pervaded the structure of the tooth, and preserved it from decay. No vessels, nerves, nor absorbents of any kind have ever been shown to exist in the ivory or enamel of the teeth; although the dentists have constantly affirmed that they do exist. But the microscopical investigations of Purkinje, Muller, and Retzius have set this question at rest; for they discovered no vessels in the structure of the teeth capable of any vital action, and the tubes of the ivory, besides being several diameters smaller than the globules of the blood, were already filled with a calcareous inorganic substance.

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[*] Mikroskopiska Undersökningar öfver Tändernes Särdeles Tandbenets struktur. Stockholm, 1837.

[†] On the Structure of the Teeth, &c. By Professor Owen. Eighth Report of Brit. Assoc. Vol. vii. Part ii. p. 135.

The phenomena of the diseases of the teeth prove also their want of vitality. Teeth are not subject to inflammation, to which every organized part of the body is liable; and when Mr Bell speaks of having seen "distinct red patches" in the very substance of the ivory, and the teeth of drowned or hanged persons of a "dull deep red," we believe him as to the fact; but there is no proof that the appearances were either the result of injection of the tubes, or of his imaginary blood-vessels, with blood. Retzius ascertained that the tubes of the ivory were of considerably less diameter than the globules of blood, so that the change of colour, if it really existed, could not depend on the presence of blood; and Cuvier explains the occurrence of these dark specks in the tooth in a very different way, viz. that they are those parts of the ivory which have been deposited by the pulp whilst in a state of partial derangement of function.

Mr Bell's statement of the teeth being dyed yellow from jaundice can be accounted for, without supposing the presence of an internal circulation; for the teeth, like the nails and cuticle, are susceptible of being stained; and if the whole fluids were tinged with the bile, it is easy to suppose that the halitus or secretion thrown out by the pulp might partake of the same yellow hue, and communicate it to the teeth.

If teeth possessed vitality, how does it happen that they are never repaired when broken; that diseased parts are not thrown off; that they may decay down to the very vascular pulp before any symptoms of vital action are shown or felt, indicating the presence of a diseased action? Simply because they are not possessed of vitality. Again, why is it that decay or caries in them commences on the outer surface and spreads inwards? If caries were the result of a vital process, it would, like all other vital processes, tend to the surface. Every circumstance, however, proves caries of the tooth to be, as Cuvier asserted, the result of a chemical change and not of a vital one. Mr Bell is the only author who endeavours to explain why caries spreads inwards. He attributes it to the progressive inflammation and mortification of the healthy part of the tooth, induced by its contact with the decayed portion, which then acts the part of a foreign body. But he forgets to tell us why gold stuffing does not produce the same effect. If a soft body, like the decayed portions of a carious tooth, could excite inflammation of such a violent nature as to terminate in mortification, much more should a hard piece of gold. Treat any vascular part, as bone, in this manner, and what would be the result? Violent inflammation at the least, and probably necrosis of the whole bone. It may further be asked, why is it necessary to be so careful to remove "every particle of dead matter," and not only so, but to dry the cavity carefully previous to filling it with gold? Why, simply because every portion of the decayed ivory being saturated with the decomposing agent, would render the stuffing of the tooth unavailable. If any portion should be left, the chemical decomposition would still go on. Then how does the application of the file cure this inflammation of the bone of the teeth of Mr Bell? This also is incapable of explanation on the supposition of the teeth being vital organs.

The assertion, that the teeth are provided with nerves, rests on these facts; that, when the pulp is inflamed, touching or striking the teeth causes pain; that filing the teeth causes a disagreeably painful feeling; and that, if the teeth have been loosened from the effects of mercury, scratching their exposed necks with a steel instrument excites pain. No one will deny all this. When the nail of the finger or toe is inflamed, striking it excites acute pain, yet the nail is a non-vital production. Filing a piece of metal or ivory held between the teeth, or an artificial tooth fixed in the jaw, excites the same disagreeable sensations as filing the teeth; and yet none of these are possessed of vitality; nay, how many cannot even hear a saw sharpened without experiencing the same disagreeable sensations? As to the last instance, every day's experience proves its correctness; for when the alveolar processes and gums are inflamed from the effects of mercury, it is well known that the slightest hard substance striking against the teeth excites pain, from pressing these insensible organs against the highly sensitive inflamed pulp and alveolar process. Besides this, Hunter, and all those who have not the inflammatory doctrine to uphold, distinctly state, that pain is never experienced in a decaying tooth till the decay reaches the vascular or sensitive pulp.

From all this it may be deduced, that there is not the slightest foundation for the statement that the substance of the tooth is provided with nerves.

The presence of absorbents in the teeth rests upon a still worse foundation than that of nerves. Hunter, Cuvier, and others have proved that teeth, once coloured by taking madder along with the food during the period of their formation, are never deprived of that colour, however long the animal may live; and the habits of some savage nations who stain the teeth black, which colour is not found to be removed during life, proves the same thing. But Mr Bell states that the presence of absorbents in the teeth "does not rest upon doubtful experiment," as in a tooth which he extracted after repeated attacks of pain and inflammation, he "found a cavity in the very substance of the tooth, communicating with the natural cavity, and filled with pus." Nothing is more probable than what Mr Bell states, but a very different inference may be drawn from the fact. From a diseased action in the formative pulp, this part of the tooth where the cavity was found may have been very imperfectly organized. Inflammation of the pulp, indicated by the pain, afterwards came on; purulent matter was thrown out between the pulp and the ivory walls of the tooth; and from its becoming vitiated in its properties, corroded the imperfectly organized structure; or the vitiated matters may have even corroded the sound tooth without any previous lesion of the ivory. It is in fact a perfect counterpart to what every day occurs during the formation of the teeth whilst still within the gum, and which has been commonly termed erosion. When the teeth appear, it is found that the upper half or even more of the enamel has been more or less completely destroyed, whilst that surrounding the lower portion of the tooth is of its usual appearance. This has been generally attributed to the fluid by which the tooth is surrounded becoming of an acrid or corrosive nature from some constitutional cause, and acting as a solvent on the enamel, but again becoming of its usual mild nature before the lower portion of the enamel was formed.

No satisfactory explanations have yet been offered of the mechanism by which the fangs of the temporary set of teeth are removed. It evidently cannot be from any vital energy in the ivory of the tooth itself. With one exception scarcely a single fact on this process has been recorded from personal observation.

Delabarre is the only author who hints at the probable explanation, and, as the passage is of considerable interest, we give it at length.

"It is certain that there exists not only a law, but also an agent for the removal of all obstacles to the second dentition; this agent would not have remained so long unknown, if physiologists, instead of reasoning on the subject, had referred at once to nature. Scarcely is the first dentition completed, before the second set are preparing to destroy those, behind whose shelter they are developed. So long as the crown of the permanent tooth is only forming, the external membrane of the follicle is supplied with but few vessels; but no sooner is the crown of the tooth formed, than the capillary vessels on it become developed, and form an anastomosis or net-work as fine as that of a spider's web; whilst the internal membrane, in place of being of a thin and rosy hue, acquires additional thickness, and becomes of a deep red colour. It is at this period that a retraction of the sac of the follicle takes place, and that the intertwining of the vessels which compose its tissue forms a body of a fleshy appearance, the absorbents of which begin to act on all the surrounding parts. Thus the dental matrix, after having been dilated so as to serve as a protecting envelope for the tooth, contracts to form not only this little button-shaped body, which is found immediately below the milk teeth, at the instant when they drop out of themselves, and of which the volume augments in proportion as dentition advances; but it also forms the fleshy mass which surrounds all the crown of the tooth, the thickness of which is so much the more remarkable as the organ which it envelopes is nearer the surface of the gum."*

Whether this substance pours out a solvent fluid which acts chemically on the surrounding osseous parts, or whether its absorbents remove these, M. Delabarre was unable to determine; but he mentions that he has traced the vessels of the temporary tooth after the whole of the root had been removed.

Whether this be the true explanation of the process, it would be hazardous in the present state of our knowledge to say. The fact of the existence of a vascular fleshy button below the milk tooth when it drops out, cannot have escaped the notice of any one; and yet, strange to say, no notice has been taken of it by any author excepting Delabarre. That it is this body which removes the root of the milk tooth is more than probable; and that Delabarre's description of its formation approaches to the truth, appears also probable from this fact, that if from any cause the permanent tooth, which is to replace the milk one, pushes through the alveolar process and gum without having destroyed the bony partition which existed between it and the milk tooth, the root of this last is found not to be corroded or shortened in the slightest degree. This circumstance is noticed by Hunter, Fox, and other writers on dental surgery. The dental germ is now proved to be a prolongation of the mucous membrane, and this vascular button found under the milk tooth during the period of its shedding, in all likelihood partakes of the nature of that membrane, being, in fact, a modified portion of it. Now if osseous matters are introduced into the stomach or mucous membranes, the juices there dissolve the bone. It is very probable that a similar solvent secretion is poured out by this vascular button, which dissolves the root of the milk tooth. When once in a state of solution, the absorbents would easily remove it, and allow of a renewal of the solvent action upon the remaining portions. When the tooth drops out it does not present the appearance of an organ which has been the subject of a vital absorption; for, instead of having its edges rounded, and regularly removed all round, its edges are jagged and very irregular.

So far, then, as the present state of our knowledge of the process of shedding the teeth extends, it seems to be the most probable supposition, that the fangs of the milk set are removed by virtue of a chemical solvent secreted by the fleshy button found at their roots.

Having thus shown that the teeth are possessed neither of blood-vessels, nerves, nor absorbents, and consequently that they are destitute of vitality, the next question comes to be, to what category or class of structures do they belong?

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* Delabarre, p. 80. 81.

Teeth have been classed either with the osseous or with the epidermic structures. With bones they do not present much analogy, if we except the circumstance of their being of somewhat similar chemical composition. They differ from bones in not being formed on a cartilaginous base, in possessing neither blood-vessels, nerves, nor absorbents; in not being covered with a periosteum; in being formed by layers, which after their formation do not undergo any vital change; in not being regenerated after being broken; in not being subject to any of the diseases to which the osseous structures are liable; and in many animals continuing to grow during the whole of life.

The only other structures to which teeth have been referred is the epidermic; and though at first sight they may not appear to present much analogy with these, yet, on a more close examination, the analogy becomes apparent.

In all classes of animals, organs are provided for dividing or comminuting their food, and the lower we descend in the scale of organized beings, the more closely do these organs which supply the place of teeth resemble the cuticular tissue; and when we arrive at the class Insecta, the most minute examination cannot detect the slightest difference of structure between the external covering and the mandibles. Bone in no case ever supplies the place of teeth; but all animals which are not furnished with teeth have their place supplied with a cuticular or horny structure. Thus in the Myrmecophaga, Manis, and Echidna, the jaws are alone protected by a delicate cuticular covering. In the Balænæ, plates of whalebone terminated by bristles supply the place of teeth. In the tortoises, a scaly incrustation defends the jaws. In birds it is a true horny covering which covers the jaws, precisely similar in structure to that of the talons or claws of the same class. In the Cephalopode Mollusca, the jaws or mandibles are composed of a true horny bill; and in many of the Acephalous Mollusca, these organs are formed of stony concretions similar in composition to their protecting covering or shell. In the Crustacea, they are hard stony appendages, furnished with hairy filaments, precisely similar in composition and structure to their external covering.

Thus the analogy of the masticating apparatus of the whole animal kingdom with their cuticular coverings, furnishes the strongest presumption that teeth should be considered as belonging to the epidermic tissue. But the evidence that such is the case does not rest on analogy alone. Both are produced by a process of secretion or transudation; both appear on the external surface of the body; in both the phenomena of nutrition are wanting; and no vital actions are demonstrated in either. Their intimate structure is also somewhat similar. Both are composed of minute tubes, and both grow from vascular bulbs.

This last reason is perhaps the strongest which can be brought forward in favour of the analogy of the teeth with the epidermic or cuticular structures. The recent investigations of Arnold* and Goodsir† have ascertained the fact of the dental follicle being a prolongation of the mucous membrane of the mouth. They discovered that, at a very early age of fœtal life, these dental follicles were apparent as elevations on the mucous membrane of the mouth, and that they became gradually enclosed within the fœtal gums. Now the tooth is developed around the vascular pulp, which lines this follicle, precisely in the same way as some of the cuticular structures are formed, as for instance, the feathers and quills of birds, and perhaps also the hair and bristles of all animals.

Blainville‡ describes the bulb which secretes the feather as composed of an outer fibrous coat, within which is the highly vascular and nervous follicle, which is the organ of secretion. The secreted matter which forms the feather or quill is thrown out by this internal vascular organ between it and the external fibrous coat, and the feather is pushed through the external coat, which opens towards the surface of the body, by the additions made to its lower extremity. Thus both feathers and teeth are formed in an analogous manner; as in both there exist vascular and nervous bulbs or follicles; in both the secreted substance is formed external to this vascular part; in both there is a dense membrane in the first stage of the process surrounding both secreting and secreted parts; in both the connection to the dermoid tissue is apparent; and in both the secreted portion projects above the surface of the epidermis.

It is to be regretted that the structure of the bulbs of the hair has not been more minutely studied, for it can scarcely be doubted that the same general disposition of structure will be found to exist as that which is seen in feathers. It is true the structures of the bulbs of the whiskers, as being larger, have been cursorily examined, and the same general structures found to exist as in that of feathers, but it is not mentioned whether any portion of the vascular bulb was surrounded by the secreted portion. More minute investigations will, however, probably detect that such is the case, and that the same general structure will pervade all the appendages of the epidermic tissue.

The epidermic structures are the only ones which continue to grow during the life of the individual, and it would make the analogy of teeth with these much more complete if it were found that they too are possessed of the same property. Though this is not the case with man it is so with many of the inferior animals. The incisor teeth of the whole class Rodentia grow during life; the teeth are never provided with roots, the vascular pulp continues active, and, in proportion as the teeth wear down, they are pushed forwards by additions to their alveolar extremities. It is the same with the tusk of the elephant, walrus, &c.

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* Arnold, Salzburg Medicinisch Chirurgisch Zeitung, 1831.

† Edinburgh Medical and Surgical Journal, January 1839.

‡ De l'Organization des Animaux, ou Principes d'Anatomie Comparee. Par M. Ducrotay de Blainville. Paris, 1822. Vol. i. p. 106.

It appears, then, that the teeth are to be regarded as appendages of the epidermal tissue, analogous to claws, feathers, hair, &c. and that like these structures they are not possessed of vitality.

Regarding Mr Robertson's treatise, it only remains for us to say, that, so far as it goes, his observations seem to be the result of much experience in the practice of dental surgery; and we have no hesitation in recommending it to the notice of those who devote their attention to the practice of this art.

ART. II.—*Essays on various subjects connected with Midwifery.* By THOMAS RADFORD, M. D., Fellow of the Royal College of Physicians of Edinburgh; Lecturer on Midwifery at the Royal School of Medicine and Surgery of Manchester, &c. Manchester, 1839.

IN this unpretending volume, Dr Radford has collected together a number of valuable obstetric essays which he had previously published, at various times, as separate contributions on several difficult and controverted questions, in different medical journals. In this respect Dr Radford has followed the example set him by Dr Robert Lee and Mr Ingleby. Were the same proceeding more generally adopted in medical literature, when the essays or monographs of an author become sufficiently numerous to form a volume, it would facilitate much the labour of the student, when pursuing any particular subject in medicine, and it would give the writer's literary labours a more concentrated and convenient shape.

Some of Dr Radford's essays were originally published in the pages of this Journal. We deem it unnecessary to do more than to refer our readers to his Essay on Turning, in which he strongly recommended that operation to be always performed by bringing down one foot only, (Edinburgh Med. and Surg. Journal, Vol. xxxvii. p. 256;) and to his remarks on secondary umbilical hæmorrhage in Vol. xxxviii. p. 1.

The Second essay in the present volume contains the history and treatment of one of those very rare cases of presentation of the longest or occipito-frontal diameter of the child's head in the shortest or antero-posterior diameter of the brim of the pelvis. We call them rare cases—because, though this was believed by many of the older accoucheurs to be the most frequent and natural position at the brim, it is alleged by Naegele, Burns, Rigby, and many high authorities of the present day to be *impossible*, where the pelvis is of the natural configuration, and the child of the full size. Mad. Boivin found it six times in 20,000 cases, and Dr Dewees of Philadelphia thinks he has met with it in three instances. If it ever does occur, it may require the position of the head to be rectified, after the *os uteri* is sufficiently opened, by the hand, or, as Dr Radford prefers, by the use of the long forceps.

The Third essay discusses the nature and effects of that kind of compression of the cranium of the infant during parturition which produces the "mould shot head," as it is termed. Dr Radford shows that considerable lateral compression does not materially injure the contents of the encephalon, but that when a similar degree of compression is applied so as to diminish the occipito-frontal diameter, the child is liable to be born apoplectic, with the conjunctival vessels injected, and the countenance livid and turgid. The brain on dissection in such cases is often found highly congested, and even sometimes presents an effusion of blood at different parts. We believe hæmorrhagic apoplexy is really much more frequent in the new-born infant, as a consequence of labour, than is generally supposed. The investigations of Chaussier and Cruveilhier have shown that it is one of the most common causes of death among the still-born children at the Maternitè at Paris; and Dr Evory Kennedy has so far confirmed their observations at the Dublin Lying-in Hospital. Valleix has lately published some interesting cases of it. It is not unfrequently the result of injurious compression by the forceps. In a child extracted by the long forceps in a case of deformed pelvis, and that lived for a few hours, we found on dissection considerable hæmorrhagic congestion and effusion within the encephalon; and lately we saw an instance of hemiplegia in a new-born child, where an injury had been inflicted on the opposite side of the head by the forceps, and probably some internal effusion had taken place.

The Fourth essay is on the *Long Forceps.* It is preceded by a history of the instrument, and of the modifications of it used by different obstetricians. Dr Radford has himself extensively used a new variety with blades of unequal length, and their shanks placed parallel. His instrument has only one curve to correspond with the convexity of the fœtal head, and its handles are very short, so that it may be used much more with an extracting than with a compressing power. For more minute particulars regarding its construction and mode of introduction and action, we must refer to the essay itself, which will be found to contain some earnest, and, as we believe, just injunctions to have recourse to this instrument in many of those cases in which a few years back the crotchet would have been unhesitatingly used. We object not only to the too free use of the latter, as in all cases necessarily destructive to fœtal life, but in many instances as much more dangerous to the mother than the judicious application of the forceps. We know from a great basis of statistical data, that craniotomy has generally proved fatal in about 1 in 5 cases to the mother, while forceps operations have not been fatal in above 1 in 18 cases. Dr Churchill's investigations on this, and on other statistical matters in midwifery, entitle him to the best thanks of the profession.

The last essay in Dr Radford's volume is on *Inversion of the Uterus.* We regard it as a most excellent monograph. Dr Radford thinks with Dr King that this accident is much more frequent than is generally admitted. It is concealed by the practitioner because it is an occurrence which is very generally, but very undeservedly conceived both by the patient's friends, and by the medical man himself, to attach blame to his character. This feeling is apt to paralyze the energies of the surgeon, and to prevent him from immediately adopting those measures which are necessary for the reduction of the inverted organs. It is this procrastination which is blameable, and not the accident itself, which is one, as Dr Radford has shown, that may happen in the best hands, seeing that it depends not so much upon any practice which the surgeon may have adopted, as upon morbid actions taking place in the uterus over which he has no control.

Most authors attribute inversion of the uterus to causes purely mechanical,—such as pulling rudely and violently at the funis in order to remove the placenta. But, that this is not the fact, is evident from a number of circumstances. The accident has happened repeatedly when the cord was of its usual length, before any force has been applied to it. It has been found before the child was attempted to be separated by dividing the cord; and it has occurred when the cord has been so putrid as to break with the slightest effort. We might refer also to cases where it has happened when the process of parturition was left entirely to nature; and in support of the same view of the subject, Dr Radford might have quoted the cases recorded by Boerner* and Klaatsch,† in which this inversion took place in instances where the child was expelled some hours after the death of the mother, and when there was no person present to interfere with the process. According to the prevalent idea abovealluded to, of the mechanical origin of inversion of the uterus, it is believed that the uterus is in a state of relaxation and atony, so that it offers no resistance to any force applied through the medium of the funis. Dr Radford, however, has shown, by the history of several cases which he has himself met with, and of others recorded by Cleghorn, Brown, Merriman, &c. that the fundus and body of the uterus, so far from being in a state of relaxation, are generally, if not always, in a state of unnatural contraction, as shown by the strong and violent uterine pains which are present, and by the firmness and hardness of the inverted viscus. At the same time, however, that the fundus and body of the uterus are in this state of unnatural excitement and action, the *os uteri* appears to be comparatively relaxed and dilatable, seeing that it offers no resistance to the protrusion of the tumour through it. In other words, it is evident, as Dr Radford has expressed his own doctrine, that the fundus and *os uteri* are in directly opposite conditions; the former is in a state of violent contraction, the latter in a state of atonic relaxation, and this relative difference in these two parts of the organ is indispensably necessary, as Dr Radford conceives, for the possibility of the occurrence of inversion. In other words, it arises, like the hourglass contraction of the uterus, from an inequality in the time and degree of contraction of the different parts of the organ; and in Herbin's thesis on Incarcerated Placenta, Dr Radford will find a case of this kind highly illustrative of his views of the pathology of inversion, inasmuch as in the case alluded to, the portion of the uterus which formed the chamber retaining the placenta, was, notwithstanding the bulk of it contents, so firmly contracted, that it passed through the very relaxed *os uteri* and projected into the vagina.

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* Loder's Journal für Chirurgie, &c. Vol. i. p. 519.
† Henke's Zeitschrift, for 1826. Vol. iii. p. 45.

At the same time, while we freely confess that we believe Dr Radford has proved that his explanation applies to the majority of cases of inversion of the uterus, we can easily conceive other instances in which, the whole uterus remaining uncontracted, a mechanical cause, such as strong traction at the cord of an adherent placenta, may lead to the same frightful accident, in the way pointed out by Spence, Clarke, Gooch, Gardien, and most of our other systematic writers on midwifery.

The proper diagnosis of such a dangerous accident is often a point of great importance. In a case detailed in the Gazette Medicale for 1832, the inverted uterus was mistaken for a polypus, and the woman died in consequence of inflammation excited by an attempt to remove it. Dr Radford details two cases in which the tumour formed by the inverted uterus was mistaken for the head of a second child. We know of one distressing case of this kind, where the midwife in attendance fell into the same mistake, and had dragged the uterus far down between the thighs of her patient before she discovered her error, and sent for further assistance. We have heard of another case where the uterine tumour in the vagina was mistaken for the body of the placenta, and pulled outwards, under this idea, with fatal violence.

Dr Radford's remarks on the diagnosis of inversion are extremely valuable on this account; that he has shown, contrary to the opinion generally entertained by obstetric authors, that hæmorrhage *rarely* occurs to any great extent in cases of this accident, except when the placenta is partially detached or broken up in its structure, or where the uterus itself has been lacerated.

In the treatment of inverted uterus, and in attempting that reduction of the organ which always forms our most immediate indication, Dr Radford strongly advises us, provided the inversion is complete and the placenta still attached, to remove this latter mass, before we endeavour to compress and return the uterus itself. He has, as we have just hinted, fully shown that we need not be deterred from this practice by any dread of hæmorrhage. If the placenta, he observes, be completely detached from the uterus, this organ contracts as under ordinary circumstances, and the bleeding ceases. We need scarcely point out how much the separation of the placental mass will facilitate our attempts at reduction, and how highly necessary it is to effect this, if possible, before the inverted viscus becomes enlarged from congestion, and before the *os uteri* becomes too much irritated and contracted to admit of its easy return. In one case Dr Denman was unable to reduce the organ after the lapse of four hours. We must not, however, despair if unsuccessful in our first efforts, or during the first stage. The inverted uterus has been reduced now in a number of instances at a distance of several days from the occurrence of the accident, in cases where the threatened inflammatory symptoms had been kept in abeyance by the active measures that were adopted. Mr Cawley,* in one instance, reduced the organ after it had been down three days; and in other cases Dr Radford reduced it after seven, and Mr Ingleby after eight days. In one case Dr Belcombe † succeeded though the inversion had existed as long as twelve weeks. Cautious attempts of this kind, where there is no inflammatory complication, may, therefore, in some cases be warrantable, at a late period after the accident, with a view of saving the patient from those constant discharges, and other annoyances and miseries which the disease, when not remedied in its first stages, very generally entails.

We wish this volume should fall into the hands of certain obstetric practitioners, male and female; for its perusal and obedience to its recommendations would assuredly prevent much evil. It is a great misfortune, however, to call it by no more severe name, that the persons who most require its instructions, are the least likely to think of looking into its pages.

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* Lond. Med. Journal, Vol. vi. p. 366.

† Med. Gazette, Vol. vii. p. 783.

ART. III.—*The Stomach in its Morbid States; being a Practical Inquiry into the Nature and Treatment of Diseases of that Organ; and into the influence they exercise upon the origin, progress, and termination of Diseases of the Liver, Heart, Lungs, and Brain.* By LANGSTON PARKER, Member of the Royal College of Surgeons, &c. London. London, 1838. 8vo. Pp. 303.

THE present author observes, both with ingenuity and truth, that the subject of organic disease is not so important as that of the primary conditions by which it is preceded, and which, by continuing for a series of years, ultimately induce incurable affections either in the organs in which they are seated, or, by sympathetic connection, in remote parts. It must be allowed, indeed, by all those who have studied morbid anatomy most extensively and carefully, that it reveals to us, in the majority of cases, only the effects of disease, and that one of its chief and most important uses, is to enable the pathological inquirer, by collecting and comparing instances of morbid changes in different stages of progress, by connecting these lesions, when practicable, with the external symptoms to which they give rise, and, considering the circumstances under which they originate, to trace these lesions to their causes, or rather to those incipient morbid actions from which doubtless they proceed. It is only in this manner that we can hope to discover, if the expression may be permitted, cures for many organic diseases. These diseases are always in their advanced stage beyond the influence of the means of art. But if it could be proved, that they are the result of morbid action, it is neither absurd nor unreasonable to believe, that there is a period at which this morbid action may be moderated, controlled, and even extinguished, and therefore prevented from giving rise to morbid products.

It is chiefly under the influence of such considerations as these, that Mr Parker has written the present work. His object is to investigate and elucidate the nature of the primary morbid conditions of the stomach, and the diseases which they by sympathy induce in different remote organs, as the liver, the lungs, the heart, and the brain. These primary morbid conditions he refers to three general heads; 1. Congestive or Inflammatory states; 2 Affections of the sensibility of the organ, both organic and animal; and 3. A disordered state of the secretions; which latter, however, he admits, is here placed, not because it is really a primary morbid condition, but because it is preceded by no palpable morbid condition.

The first class of affections, which is perhaps the most numerous, is considered in detail in the first four chapters of the volume. Of the second class, which is not quite so extensive, the author treats in the fifth chapter. In the sixth chapter he examines those affections in which the morbid state of the secretions perform a prominent part. In the seventh chapter the author enters on the consideration of the influence of the stomach on other organs, and examines in succession the morbid influence as it is evinced upon the liver, upon the lungs, upon the heart, and upon the brain. He then considers, in the eighth chapter, the influence of morbid states of the stomach upon the origin, progress, and termination of diseases of the liver; in the ninth upon certain forms of dropsy; in the tenth chapter on the origin, progress, and termination of diseases of the heart; in the eleventh, on the origin, progress, and termination of diseases of the lungs; and in the twelfth chapter, on the origin, progress, and termination of diseases of the brain. And the thirteenth and concluding chapter is devoted to the exposition of the treatment required in the management of the different forms of gastric disorder and their effects, and the effects of different classes of remedies in relieving or removing the different symptoms.

The author begins his inquiry with the examination of those morbid states of the stomach which are characterized by symptoms of increased vascularity. This he represents to consist in morbid fulness of blood in the mucous coat of the stomach, which interfering with the functions of the organ, impedes digestion, and if not removed, ultimately lays the foundation of inflammatory disease. It is therefore not the same as actual inflammatory disease, but merely the preliminary condition to it; in short, what may be termed vascular irritation or erethism. The author represents it to be the effect of irritation, generally prolonged and repeated, most commonly the irritation resulting from dietetic errors, when he says it is called inflammatory indigestion. This condition may come on in the course of any disease or as a consequence of it; and though not dangerous in this state, is liable to be converted by improper treatment into serious and even untractable disorder. The situation of this change may vary; and according to this variation, and the greater or less extent of the stomach affected, are the variety and intensity of the symptoms, and the number of sympathies by which it is attended. The symptoms vary from mere distension after taking food to constant vomiting, attended with thirst, dull pain, fever, and headach.

This affection is never of itself in this stage fatal; and, therefore, it is difficult to ascertain its anatomical characters, which can only be done in those cases in which patients labouring under it are destroyed by other disorders. The author adduces the following case in illustration;—

A man of 40, who had suffered from headach for several years, having eaten freely of cucumber and other indigestible articles, was attacked with vomiting, uneasiness in the region of the stomach, distension, flatulence, and all the common symptoms of indigestion. During their continuance he was attacked with giddiness, terminating in coma, and died in thirty hours after its commencement. On examining the body eight hours after death, the middle lobe of the left central hemisphere contained a softened portion of brain about the size of a walnut. The mucous membrane of the stomach was vividly injected in patches, which were most numerous towards the pyloric division of the organ. The case is interesting in two respects; first, as it shows the state of the gastric mucous membrane in this disorder; and, secondly, as it demonstrates the influence of this state upon the brain, and especially an affection of some standing.

Mr Parker justly remarks that though this state approaches to inflammation, it is not the same, and ought to be distinguished from it; and in proof of this, he appeals to the observation of Dr Beaumont on the interior of the stomach of St Martin, as given in our 52d volume (p. 190-192). The disease consists pathologically, therefore, he infers, in morbid fulness of blood in the gastric mucous membrane. In true inflammation, on the other hand, other changes ensue, as thickening or softening of the mucous coat, or alterations in the submucous, cellular, or muscular tissues.

This morbid fulness, or vascular congestion, nevertheless, is liable to terminate in genuine inflammation; or if it do not, it may, by its constant though moderate irritation on the stomach, induce various morbid states in other organs which, from predisposition and other causes, are most liable to become diseased. Thus the irritation may be spread to the mucous surface of the *bronchi*, when the symptoms are aggravated by the addition of stomach cough; or the liver may become hypertrophied; or the gastric disorder, if seated in the cardiac portion, may irritate the heart and derange its action,—rendering that action irregular; or it may, by means of sympathy, either induce new disease in the brain, or convert old and almost latent disease in that organ into violent and speedily fatal affections.

All febrile and inflammatory disorders Mr Parker regards as attended with more or less vascular irritation in the stomach; because, from its intimate connection with all parts of the economy, it is liable to be thrown into morbid states by any impressions made on the constitution at large or upon any of its parts. Hence it is requisite in almost all febrile and inflammatory maladies to ascertain its condition, and study to remove or rectify that, if morbid. As the stomach also is the medium through which all remedies operate on the system or its component parts, it is indispensable, in order to insure the proper and efficient operation of these remedies, to see that it be in a healthy state previous to administration,—fit to receive and dispose of remedial agents when given. If attention be not given to this condition, the stomach, instead of acting on remedies, and enabling the latter to act on the system, is irritated by them. It is evidently owing to this cause that, in many diseases, remedies which in other states of the system are active and beneficial, prove inert or irritative; and hence, that so many medicines reputed diuretic or diaphoretic fail in producing either effect, so long as the morbid state of the stomach remains. The irritative state of the stomach must, therefore, be removed by appropriate treatment, before such agents can be administered with the hope of producing their proper and expected effects.

It is an observation not less important, that this state is liable to be induced in the course, or at the close of sundry acute diseases, during the period of what is termed convalescence. The tissues of the stomach partake at that period of the general feebleness of the whole frame; but, as it is too often conceived requisite merely to gratify the cravings of a keen appetite without regard to the powers of the organ, and to give frequently large quantities of food in order to restore flesh and strength, these excesses very often load and irritate all the textures of the stomach, and cause all the symptoms and uneasy feelings of indigestion, not unfrequently of a very painful character.

The affection of the stomach in the continued and eruptive fevers is so manifest and general, that it merely deserves notice.

In his second chapter Mr Parker considers those morbid states of the stomach dependent on *anæmia.*

It is a curious fact that great discharges of blood, by which the vascular system is rendered empty, are occasionally followed by the same symptoms which attend irritation from vascular plethora of the stomach. Thus after profuse uterine hemorrhage, either from abortion or after parturition, it is not uncommon for flatulence, fulness, tenderness in the epigastrium, with pain and weight after taking food, to succeed. These symptoms Mr Parker ascribes to the stomach not receiving a due supply of blood to keep it in a healthy state. No doubt can be entertained of the fact. The question is, how or by what mechanism is it produced? Two conditions may follow large hemorrhages, artificial or natural. *First,* the mucous membrane and the secreting tubes may, by the absolute want of blood in the vessels, be unduly weakened; gastric juice is secreted scantily or not at all; and in consequence the food that is taken is not digested, but remains like a foreign body irritating the enfeebled mucous membrane. *Secondly*, emptiness of the vascular system is always followed by loss of tension in the vessels, feeble action in the heart and arteries, and a more feeble or languid motion of the blood through them, slow motion, retardation, and even stagnation. In this manner congestion in various organs is often the consequence of large or copious depletion ; and it so much more readily affects the capillary system of the stomach, because that organ is supplied with large and numerous blood-vessels, because its tissue is loose, and because its mucous membrane being very extensible, easily undergoes that sort of yielding or distension, which is favourable to vascular congestion. It is also possible that the feebleness of its muscular tissue after blood-letting is favourable to the same sort of distension.

Mr Parker then enters, in chapter third, on a detailed history of the symptoms and sympathies of vascular irritation of the stomach, and more especially of that form of indigestion which is considered as inflammatory in nature.

The symptoms of this affection are not by any means uniform. Thus the state of the tongue varies much ; and that organ may be either contracted, dry, coated in the centre, and bright red at the tip and edges, with prominence and redness of the papillæ, or the red papillæ may be protruded through the general fur of the tongue ; or the lingual surface may be preternaturally red and smooth,—a condition which always denotes the presence of a more serious degree of disease than either of the two first mentioned states. The first condition is usually associated with the ordinary symptoms of distension and weight in the epigastrium, nausea, and vomiting. The second state is accompanied with despondency, languor, and faintness, and peculiar feelings of uneasiness in the epigastrium, which are produced and aggravated by pressure. And the third state is associated with hardness and resistance of the epigastrium, indicating a thickened or indurated state of the membranes entering into the composition of the stomach.

The most puzzling part of this symptomatology is, that, with very considerable disorder of the gastric mucous membrane, in the early stage, the surface of the tongue is often not affected in any degree so much or so constantly, as to furnish a uniform index either of the presence or the amount of the disorder.

It is always important to advert to the state of the epigastric and hypochondriac regions, which are generally distended, and, if not painful, bear pressure badly. Fulness is most common to the early stage of the disorder ; and afterwards it disappears, and is succeeded by resisting hardness and dulness on percussion. The epigastric region, especially its centre, is always hotter than usual. Swelling in the left hypochondriac region he regards as dependent on a congested state of the spleen, which in some instances, on inspection after death, has been found enlarged and united by strong adhesions to the stomach. Nausea is a very general concomitant, and often it is associated with vomiting.

In the early stage the bowels may be constipated or regular; in the latter they are generally loose, or constipation alternates with diarrhœa.

The disorder, if long continued, is liable to give rise to cough and quick breathing in the organs of respiration; to increased impulse and irregularity, or intermission in the action of the heart; to stupor, giddiness, and confusion of thought in the brain during the day, and frightful dreams and delirium at night; and pains of different degrees of severity in various points of the trunk, especially the chest and belly.

When the vascular or hyperemic irritation becomes fixed, it is converted into confirmed inflammatory symptoms. This state, however, is not wholly, or even often indicated by increased intensity of the symptoms. The pain is often much less than in the irritative state, or is not felt at all, or is dull, with constipation; and this with an anxious expression of the countenance, slight emaciation, low spirits, and flatulence after eating, are almost the only symptoms which denote the existence of the complaint. The state of the tongue varies as much in this stage of the disorder as in the irritative, and, therefore, cannot alone be adopted as a symptom. Mr Parker adduces a considerable number of cases to show, that a clean state of the tongue may be accompanied with aggravated and distinctly marked symptoms of disease in the stomach; that its surface may be coated with aphthous crusts and intensely red and smooth in the intervals of these crusts, yet without any affection of the stomach; and that this state of the tongue may be present along with pure chronic *gastritis;* yet that the state of the tongue is not altogether indicative of the disease in the stomach, but results in a great measure from local disease in the tongue itself. He is for these reasons disposed to agree with M. Louis, in the inference, that the tongue, like all other organs during febrile or inflammatory states of the constitution, is liable to attacks of inflammation which give rise to its various morbid appearances; and that, consequently, its appearances may be studied and distinguished as indicative of its own state, but not as indicative of the states of the gastric mucous membrane.

There is in these views, it appears to us, a mixture of truth and error. It is doubtless true that in many cases of unequivocal dyspeptic disorder connected with *hyperemia* and inflammation of the gastric mucous membrane, the tongue does not present a fur, and is apparently moist and clean. But two circumstances are here to be noted. Is it perfectly certain that this is the healthy appearance of the tongue; and has the organ been thoroughly examined and inspected at different periods of the day? In many persons the tongue, which is moderately clean during the day, is loaded with a viscid rough fur in the morning; and in several, it may be observed, that though the anterior part of the tongue is clean, its base is covered with a fur. In the same class of persons, especially if dyspeptic, it is observed that the mouth is dry during the night, and a foul bitter taste is felt in it in the morning. There is another circumstance which deserves attention. In many persons the connection between the state of the tongue and that of the gastric mucous membrane is so slight,—the former feels so little the influence of the latter,—the chain of connection seems to be so incomplete or interrupted, that the disorder in the former organ does not bear an exact proportion to that of the latter.

The notion of M. Louis, adopted by the author, that the tongue is liable to attacks of inflammation, which give it its various morbid appearances, we feel it impossible to regard as well founded.

That the tongue is liable to attacks of inflammation is a principle which must be admitted by every one who considers, that it is an animal organ composed of various simple but organized tissues. But it is quite unnecessary to imagine that all its morbid states depend upon the presence of inflammation. It is sufficient to remark, that every mucous membrane, when its circulation and its secretion are in any manner disordered, changes greatly the nature of the matters secreted by it,—in order to be convinced that the same pathological proposition may be applied to the tongue. The vessels of the lingual mucous membrane and papillæ secrete in the healthy state a thin fluid, which keeps the organ moist and ready for recognizing the qualities of sapid bodies, and for performing the functions of speech, prehension of the aliments, and transmission of the masticated mass into the pharynx. No sooner, however, are the mouth and tongue attacked even with the effects of cold, or suffer under the disorder of fever, than the moisture diminishes, and instead of a thin transparent fluid, the tongue is covered with a thick whitish, or gray viscid paste, which is evidently an unhealthy product of secretion then disordered. This condition it is unreasonable to regard as the effect of inflammation, because the tongue, at least its surface, is not painful, neither is it swelled, as in *glossitis*, neither are the usual products of inflammation formed. It is manifestly the result of morbid secretion, which again is the effect of change in the circulation.

There is no disease in which the tongue seems to be so much changed as in fever. It is then not only loaded with fur, which eventually is dried and parched into a brown crust, but it becomes sore, shrivelled and not unfrequently chopped, causing the patient to complain much when acid fluids are given. Yet not even this state can justly be regarded as inflammatory. It presents no morbid product, excepting the incrustation of viscid dried mucus, upon the ejection of which the subjacent surface of the tongue is found sound and natural, with the exception of its secreting once more viscid mucus, which dries, and forms a crust, though less firmly and to less extent, than the previous coating. It furnishes no inflammatory product, as albumen or purulent fluid; nor does the action even terminate in any other mode than by resolution.

There is strong reason to believe that the coating of the tongue is much more common to the acute forms of gastric disorder than to chronic forms or advanced stages of the complaint. Thus, while the tongue is generally moist and heavily furred, when the mucous membrane of the stomach is acutely but superficially irritated and disordered, it is perfectly clean and moist, and sometimes smooth, when there is an ulcer of the mucous membrane as large as a sixpence or a shilling, which has destroyed that tunic and the muscular coat, and is proceeding to produce peritoneal inflammation, rupture, and perforation.

There is, nevertheless, one condition of the tongue connected with gastric irritation, which is so constant that its presence may always be regarded as indicating a considerable degree of disease of the gastric mucous membrane. This is described by Mr Parker in the following manner:

> "One condition of the tongue may be here alluded to, which is almost invariably an index of gastric irritation, of an inflammatory kind. It is when this organ, not materially changed in other circumstances, presents, at the point and edges, a number of vividly red points. These resemble grains of vermilion scattered over the tongue. They appear to be the papillæ enlarged, and supplied with an increased quantity of blood. When there is any coating upon the tongue, the brilliant papillæ are seen uncovered by it. I believe this condition is seldom found unaccompanied by vascular irritation of the stomach. When it is met with in persons who do not offer any symptoms of stomach derangement at the time, we may always conclude that there is a strong predisposition to it, and that a very slight cause is capable of producing gastric disturbance."—Pp. 37.

Among the other symptoms attending this disorder, pain either in the centre of the epigastric region, in the centre of the sternum, or in the throat, is in the confirmed stage of the disorder most common. Pain is not necessarily felt in the stomach or in the site of the stomach itself, but may be complained of in the right hypochondriac region, or in the left hypochondriac region, or even deep in the back. The most common site, according to the present author, is the centre of the epigastric region.

A sense of fulness or distension after taking food is also a very common symptom; and it is in general so urgent, that though patients have a good appetite, yet they are unable to take food to sufficient amount to gratify its natural craving, in consequence of the uneasy and painful sense of distension which ensues, and which is often so great, that they are obliged to undo and slacken their dress in order to obtain temporary relief.

Vomiting, though often proceeding from other causes, and other states of the stomach, is, nevertheless, the only symptom indicating irritation or inflammation of the mucous membrane of the stomach. Mr Parker thinks it is, according to his experience, more common in the early than in the advanced stage of the disorder; that is, it takes place chiefly when the mucous membrane is turgid with blood, and the sensibility of the organ is exalted. When it takes place in the latter stage of the disorder, it is when the mucous membrane presents alterations either in colour or in consistence. It may further be observed, that the occurrence of vomiting is much influenced by the amount of food. If food be taken often, and to any quantity, then vomiting follows very speedily, and recurs every time that food is taken. If, on the other-hand, food be taken in small quantities, vomiting sometimes ceases altogether, and recurs only when this rule is transgressed. In short, one of the most effectual means of allaying vomiting in chronic *gastritis*, is to direct the food to be taken in such small quantities, and to be of so mild a nature, that it may be sufficient simply to sustain life.

There is little doubt that inattention to the circumstance now mentioned is the principal reason, why cases of dyspeptic disorder are converted, in the course of a few years, into organic changes in the tissues of the stomach; or, in other words, the history of these cases illustrates the mode in which symptoms of mere vascular irritation are converted into symptoms of chronic inflammation, with all the usual consequences and effects of that process. A person affected at twenty or twenty-five with flatulence, distension, uneasiness or pain in the region of the stomach, and nausea, with more or less impaired appetite, instead of lowering his food both in quality and quantity to the enfeebled powers of his stomach, is directed to have recourse to tonics, stimulants, in some instances to solid animal diet, and other means believed capable of preventing the symptoms of indigestion. Under the use of these means the symptoms sometimes undergo temporary abatement. In other instances, they are aggravated until the feelings produced oblige the patient to diminish his food; and this he does the more willingly that he finds he cannot take it with relish, and without aggravating all his sufferings; and then they gradually subside, and return not, unless the stomach be again irritated, with the quantity and quality of the food. In many cases, however, either from not attending to the rule now mentioned as the first curative principle, or from treating symptoms of indigestion by tonics, stimulants, and nutritious food, the symptoms receive either only temporary relief, and recur at intervals, or they recur frequently, until irritation is converted into positive inflammation of the gastric mucous membrane; and the usual changes in the latter are induced. This progressive transition from the irritative state of the mucous membrane of the stomach, which has already occupied the attention of a considerable number of authors, Parry, Bichat, Barras, Broussais, Andral, and others, is described in the following manner by Mr Parker. After observing that the dynamic derangements, or those which are called functional, are commonly the first symptoms of an organic change which is already commencing, he proceeds,—

"The attack, at first coming on from accidental causes, leaves a disposition in the organ to its recurrence on the application of slighter exciting causes than those which at first produced it, the mucous membrane remaining in a state to be thrown into inflammatory action from slight dietetic errors; and hence repeated irritations of the inflammatory kind, which in the intervals leave the patient apparently free from complaint, ultimately terminate in confirmed organic change.

"I have had the charge of several patients in the latter stages of gastric diseases, who have been able distinctly to trace the commencement of their complaints. These have seldom commenced before the age of twenty-five, at the periods when they had begun the habitual use of a fuller and more stimulating diet than that of the earlier periods of life. The symptoms with which they were first affected were those of simple indigestion, in its various forms of pain or distension after food, nausea, or vomiting. These have ceased at intervals, have been relieved by various plans of treatment, but have shown a disposition to recur at longer or shorter intervals from dietetic errors or excesses, or from other causes, in more aggravated and obstinate forms than those in which they first made their appearance, and accompanied by sympathetic irritations in the head, heart, liver, or lungs, exhibited in the forms of giddiness, palpitations, jaundice, or cough.

"On examining the bodies of such patients after death, what has been the condition of the organs exhibiting these symptoms during life? In the stomach, changes of colour or consistence, ulcerations or vegetations; in the brain, thickening of its membranes, effusions, increased determinations of blood; in the heart, alterations of its internal or investing membranes, or, what is more common, of its muscular structure; in the lungs, congested or inflamed states of the bronchial mucous surfaces, or of the lungs themselves; and in the hepatic system a diseased condition of the veins or substance of the liver, alterations of colour or consistence, and various morbid states of the bile, the gall-bladder, and the excretory passages of the bile.

Many of the patients in whom dyspeptic symptoms have commenced about the ages of twenty-five or thirty, have fallen victims to gastric diseases, and their complications at the ages of from forty-five to fifty-five. A number of the histories of these patients, detailed in the subsequent pages of this work, have been carefully collected from the sufferers themselves; and the pathologic changes their organs exhibited have been ascertained by my own dissections after death."—Pp. 46—48.

The next part of the subject treated is that of affections of the stomach characterized by derangements in its sensibility.

As pain is often not in proportion, either by severity, duration, or the mode of its occurrence, to the degree in which the other symptoms of disordered digestion are observed to take place, it becomes requisite to inquire into the origin and nature of many of those painful sensations, as gastrodynia and pyrosis, which cause so much suffering in the course of organic disease. Mr Parker is willing to admit that in many of the cases these painful sensations depend solely on a morbid state of the sensibility of the gastric nerves, unconnected with any inflammatory action; and for proofs and illustrations of this he refers to the work of Dr James Johnson on Morbid Sensibility of the Stomach and Bowels.

He is less willing to adopt to the full extent the notions of M. Barras, who referred to the head of *Gastralgia* and *Enteralgia*, a mere nervous derangement, many painful sensations felt in or referred to the stomach and bowels. He thinks that many of the cases recorded by M. Barras were inflammatory in their commencement, and were rendered nervous by the pernicious system, as he styles it, of large local depletion adopted by the physicians of the French school, who were most exclusively and devotedly attached to the principles of Broussais; and he maintains that while Broussais and Barras have gone to opposite extremes, the former in ascribing these pains always to inflammation, and the latter in regarding them as entirely neuralgic, neither are in the right; but that the truth lies between the two. He allows that there are certain forms of disease of the stomach attended with acute pain, and proceeding even to the fatal termination, yet in which no change in the tissues adequate to account for the sufferings of the patient can be detected by inspection after death; that there are other forms, in which after profuse hemorrhage, the same symptoms of painful sensations are liable to take place; that there are also forms of the disease in which, after inflammatory symptoms have been moderated or removed, the same uneasy feelings ensue, and are very distressing; and that in some instances inflammatory symptoms are associated with neuralgic sensations. In such circumstances, it is impossible to say before-hand what kind of remedies shall be beneficial, or to specify any single mode of treatment to the exclusion of others. And, consequently, Mr Parker justly observes, that the practitioner is obliged to try empirically different methods, and to have recourse to this mode of inquiry, not only to enable him to determine the nature of the disorder, but the particular kind of treatment required. In general, he observes, any exclusive method of treatment does not fulfil the purpose expected. But if any one method be adopted, that by tonics and sedatives at the first is least eligible. In general it is wisest to premise local depletion unless it is strongly contraindicated by the symptoms of debility and langour; and then to employ tonics or sedatives, or both. There is another class of cases in which, with the symptoms of pain in the stomach or some portion of the organ, symptoms of acidity predominate. In such cases, whatever irritates, excites, or stimulates the organ is liable to produce acidity, and with that more or less pain. The mere use of depletion or tonics, or even sedatives will not then be efficient, and it becomes requisite not only to take advantage of the antacid powers of the alkaline carbonates and earths, as soda, potash, ammonia, and magnesia, but, above all, to regulate and modify the diet in such a manner as neither to overload nor distend the stomach, nor to impede or derange the process of digestion. The author, however, may be allowed here to state his views in his own manner.

"Persons will remain tolerably easy under any one article of food, even if it be rather of a stimulating kind; but a mixture invariably produces a return of suffering. We know, from the researches of Prout, Tiedemann and Gmelin, and Dr Beaumont, that the gastric juice, during digestion, contains free acetic and hydrochloric acids, and that these acids are furnished in greater quantity, in direct proportion to the more or less stimulating qualities of the food; under a mild farinaceous diet, the acid is hardly to be detected. It is the impression of stimulating food upon a morbidly sensitive surface which gives rise to the formation of so great a quantity of acid, which, when formed, re-acts upon the mucous coat, and produces pain. We have certainly cases of disease in which the stomach experiences pain merely from the impression of food; but the one under consideration appears to derive additional mischief from the presence of its own morbid secretions, for the moment they are corrected, and the acid neutralized, the patient is, for the time, free from pain. The plan of treatment consists in removing all the sources of irritation, in correcting the morbid secretions, and rendering the nerves less sensible to impression. The two former objects are to be accomplished by diet and medical treatment, such as I have recommended in the detail of the case. For the latter purpose I have tried nothing more efficacious than the combination of morphia with the salts of iron, at the same time having occasional recourse to the alkalies. The farinaceous food made with milk and lime water into gruel or puddings, is exceedingly serviceable. The bowels, which are inclined to constipation in most cases, may be regulated by small doses of the ponderous carbonate of magnesia in some bitter infusion, as cascarilla or orange-peel, to which still should be added some sedative, of which the liquor opii sedativus is the best ; the tincture of hop or hyoscyamus may likewise be employed, but, as far as my experience goes, the first is the best." —Pp. 63–64.

The influence of this unhealthy state of the stomach upon other organs is occasionally not less marked and not less serious than the influence of the inflammatory condition. In the functions of the brain it causes much disorder, inducing mental despondency, impaired or confused judgment, and excitement of various kinds, forming hypochondriasis, (not hypochondria, as the author calls it,) (64,) and in some instances those false or erroneous impressions on the external senses, constituting hallucinations, or even spectral illusions. The despondency is often so considerable and so enduring as to constitute monomania, and, if long continued, general derangement or insanity. In the heart it gives rise to slight spasmodic motions, irregularity and intermission in its action, and that irritability of the abdominal arteries which constitutes epigastric and abdominal pulsation.

The principal use of the knowledge of these and similar facts is to prevent the practitioner from being deceived as to the cause or causes of any given case of mental derangement, or any given case of irregular action in the heart. In the former case he may imagine that the chief seat of evil is the brain and its membranes, or the circulation of these tissues, while, in truth, these are affected secondarily, and the primary source of mischief is the stomach, its sensibility, circulation, and secretions, and the bowels and their circulation and secretions. Mr Parker, nevertheless, admits, that there must be some peculiar organization on the part of the brain, some unusual degree of irritability, which renders it so liable to be thrown into a state of morbid sympathy with diseases in other organs. That this is the case it is impossible to entertain much doubt. For although the disordered state of the stomach and bowels is capable of throwing a gloom over the mind of any one, may cloud the judgment or obscure the intellect of the most able, and may even render the temper peevish and fretful, and the mind discontented in persons of every kind of disposition, yet these results are most frequently observed in the members of certain families, and in individuals in whom the brain is liable to undergo some disorder in its functions.

On the cause of the influence of the disorder of the stomach in deranging the action of the heart, the author gives no opinion ; and perhaps it is a point which must be regarded as an ultimate fact, for which it is impossible to assign any other reason than simply the fact. The subject is considered afterwards as far as it admits of explanation; (p. 192.)

The pathological nature of this state is not well known. The author expresses his decided opinion that it is not universally dependent on inflammatory action, though he does not deny that in several cases increased local vascular action is present; and he subsequently expresses the belief, that, in a great majority of instances, the fulness of blood in the mucous membrane of the stomach is increased, at least during the paroxysm of the attack. If this be the case, it must still be a matter of difficulty not slight to draw the line of distinction between the mere neuralgic affection of the stomach, and the inflammatory state of its mucous coat. In the former there is vascular congestion during the fit of pain, and in the latter there is no more. The difficulty of distinguishing the two affections by attendant symptoms is very great, and it is augmented by the circumstance that often the two are combined. The line of distinction is attempted to be drawn in the following table, arranged by Jolly, *(Dictionnaire de Medecine et de Chirurgie Pratique,)* from whom the author gives it.

Symptoms of The Nervous Affections of the Stomach.	Symptoms of the Inflammatory Affections of the Stomach.
Pain.[*]—Acute, tearing	*Pain.*[*]—Dull, obscure
Intermittent	Constant
Diminished by pressure	Augmented by pressure
And by taking food	And by food
More frequently coming on in the morning.	Increasing towards the evening
Tongue.—Sometimes coated[†]	*Tongue.*—Almost always red[†]
Broad	Contracted
Clean	Thickly coated
Appetite.—Morbidly increased[‡]	*Appetite.*—Wanting[‡]

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[*] "The two characters of pain described by Jolly cannot be depended upon as showing any certain distinction between inflammatory and nervous disease of the stomach, that of the nervous kind is so constantly associated with, produces, and succeeds to, partial inflammations of the mucous coat."

[†] "The state of the tongue is infinitely variable in the different forms of disease. The observations of Louis and Andral, and my own cases, show that it may remain clean in aggravated forms of inflammatory disease, even where change of structure has been produced. It may be foul, and even aphthous, where the gastric inflammation is not urgent or well-marked."

[‡] "Boulimia, or morbidly increased appetite, is a symptom commonly attendant on an inflamed condition of the mucous coat of the stomach. Total loss of appetite may also be present, and, again, this function may remain unimpaired. We see how uncertain are all these rational signs of disease."

Symptoms of The Nervous Affections of the Stomach.	Symptoms of the Inflammatory Affections of the Stomach.
Appetite.—Depraved Wish for high-seasoned meats and alcoholic drinks	*Appetite.*—Never depraved Aversion to both
Taste.—Metallic Acid	*Taste.*—Bitter Clammy
Vomiting of mucous discharges	*Vomiting* of food
Alternations of Heat and Cold in the abdomen	*Constant Heat*
Thirst.—Not increased Wish for drinks sometimes hot, at others cold	*Thirst.*—Increased Constant desire for cold drinks
Constipation.—Frequent[*]	*Diarrhœa.*—Frequent[*]
Stools.—Natural Not offensive	*Evacuations.*—Bilious, mucous, or bloody Offensive
Pulsations in the Epigastrium.—Intermittent Not synchronous with those of the heart.	*Pulsations in the Epigastrium*—Natural, continual Synchronous with the heart
No Fever. Or intermittent	*Fever.*—Frequent Continued
Increase of Disease.—Early in the day	*Increase of Disease.*—In the evening
Urine.—Clear[†] Abundant	*Urine.*—High-coloured[†] Scanty
Heat of Skin.—Natural	*Heat of Skin.*—Augmented
No Progressive Emaciation.	*Progressive Emaciation.*
Physiognomy.—Natural	*Face.*—Pale, sallow, or sunk and anxious
Temper.—Morose, fearful, irritable	*Temper.*—Little altered
Diagnostic.——Sometimes obscure	*Diagnostic.*—More manifest
Prognostic.—Less dangerous	*Prognostic.*—More dangerous
Anatomical Characters.—Equivocal, or altogether wanting.	*Anatomical Characters.*—Constant, but varied."—Pp. 73–75.

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[*] "Constipation is a symptom almost invariably accompanying both forms of disease. Diarrhœa is certainly present in some instances of the inflammatory affections, even in the commencement of disease; in the advanced stages, where complaint has extended to the bowels, it is of more frequent occurrence."

[†] "Dézeimeris has related some cases where diabetes appeared dependent upon chronic gastritis, at least the cure of the gastritis completely removed the diabetes. Andral has also detailed a case where diabetes coincided with chronic gastritis; the former disease was removed by curing the latter.—*Clinique Medicale,* by Spillan. p. 869."

The rational and most generally applicable view appears to be that in many, if not all instances, a state of irritation or erethism precedes the actual inflammatory state; that the latter always gives rise to more or less irritation, and even when removed it leaves behind it various of the symptoms of the irritative state; that in all instances in which mere erethism takes place, it is exceedingly liable to pass into inflammation; and that whenever inflammation has taken place, even though removed, it is liable to leave behind it the neuropathic or neuralgic state.

In chapter sixth, the author enters on the consideration of those affections of the stomach which are distinguished by morbid states of its secretions. Of this he notices two varieties, although we cannot perceive that they are seriously different from each other. The first is the disorder known under the name of gastric catarrh, or catarrh of the stomach, a distemper of which many examples were given by Stoll, Tissot, Frank, and De Larroque, and which has been repeatedly adverted to by Bichat and others under the name of gastric load *(embarras gastrique.)* In general it is one of the forms of indigestion. Indeed, the quantity of viscid ropy mucus with which the stomach is loaded, is not so much the peculiar cause by which that excessive quantity of mucus is secreted, as the character of the disease. This is what the author calls secretory irritation, or a state of hyperæmia or inflammation in the mucous membrane acting in such a manner as to derange and pervert the secretion. In short, when the mucous membrane of the stomach is covered with large quantities of viscid ropy mucus, the same inference must be formed as to the cause of that excessive and morbid secretion as is formed regarding the excessive and morbid secretions of other mucous membranes; that is, that the membrane has been previously in a state of inflammation. This the author shows that he partly admits, by adopting the account given of the state of the stomach in such circumstances by De Larroque and Andral (p. 81); but he at the same time expresses the opinion, that the disorder is not always or necessarily connected with these states, and may be and often is associated, he says, with a variety of nervous symptoms, which are totally different from those indicating increased determination of blood either to the stomach or the parts sympathetically affected.

" Thus, many cases of stomach disease occasionally present themselves where nausea and occasional vomiting are present, bad taste in the mouth, with uneasiness and weight in the epigastrium. Sometimes the patients vomit daily, and are never free from sickness, except for a short time after the stomach has discharged its food, or a considerable quantity of bile or mucus. There is extreme mental despondency or irritability, stupor and weight in the head, with severe pain over the forehead, quickened breathing, and a dry cough. Occasionally diarrhœa accompanies these states, or there is an alternation of constipation and looseness. That these symptoms arise from the presence of an increased quantity or morbid quality of the secretions of the stomach, acting upon the peculiar sensibility of its lining membrane, is evident from many reasons. The stomach affection and its sympathetic diseases are not relieved in these states either by bleeding, counter-irritation, opiates, or even, in many instances, by aperients, though these are generally very serviceable."—Pp. 82-83.

Mr Parker next adduces sundry examples of this distemper, illustrating and confirming the following conclusions: 1*st*, That secretory irritations may continue an indefinite period without being accompanied with any real inflammatory action in the stomach, (p. 84); 2*d*, That secretory irritation of the stomach may exist with two totally opposite pathological conditions of the mucous tissue of the organ, viz. one in which the membrane is of its natural and healthy colour or paler than natural, and a second in which it exhibits marks of active congestion or inflammation, (p. 93); 3*d*, That secretory irritation is nevertheless, when it assumes a chronic form, prone to simulate the appearance of confirmed inflammatory disease, (p. 94); 4*th*, That the sympathetic affection which these secretory irritations excite, are sometimes of a purely nervous character, and are aggravated by all antiphlogistic treatment, (p. 84); and 5*th*, That these secretory irritations are liable, under certain circumstances, to give rise by sympathy to various secondary disorders in the lungs, in the heart, and in the brain; (p. 87).

There is in these views some inconsistency which we should like to see reconciled; and as we think the inconsistency is produced principally by converting the effect of disorder, viz. the proper secretion of viscid mucus into the disorder itself; we think it not unworthy of consideration to inquire whether it might not be possible to reconcile the views, by throwing the circumstance of the mucus out of the question, and looking strictly to the producing cause of the mucous secretion.

First, then, it is to be remarked, that mucus is profusely or abundantly secreted by mucous membranes, chiefly if not solely in two conditions; the one in the second or advanced stage of inflammation of these membranes, and the other when they have been, in consequence of inflammation, generally chronic, very much relaxed as it is termed. In the first case, the membrane is at first dry, and does not secrete so long as the inflammatory action or the irritation of that action is great, intense, or considerable; and it is only when it is subsiding that the membrane begins to secrete a substance more or less altered from its normal condition. In the second case, there is pretty good reason to believe that the relaxed state, as it is usually termed of these membranes, which also is favourable to the profuse secretion of mucus, is almost invariably preceded by inflammation, and is often a consequence of chronic inflammation. Thus the profuse discharge of leucorrhœa or uterine catarrh affords an illustration of both principles. Often it is the effect of the second stage of inflammation of the utero-vaginal membrane, or it is the effect of relaxation of that membrane, which again is the consequence of chronic inflammation. In the same manner we find that in the early stage of bronchitis, the bronchial membrane is dry and secretes nothing; and it is only when that stage is concluded, or the disease has passed into a chronic state, that mucus is secreted abundantly.

Secondly, we think it perfectly reasonable to propose the question, whether mucus is ever abundantly secreted by the gastric mucous membranes, unless as a consequence of previous inflammation, or whether, granting that it be the result of the relaxed state of the gastric mucous membrane, that relaxed state is not the result of previous inflammation. In the accounts given by various authors of this disorder, it is easy to recognize two if not more stages in the complaint; one in which there are feelings of uneasiness, not urgent, but still perceptible, feelings of feverishness indicated by total *anorexia*, thirst, heat, and various other perverted sensations and functions; and the other in which, with anorexia, and sometimes sickness and vomiting of mucus, great languor, feebleness, and more or less wasting with affections of the brain and lungs, are more or less prominent symptoms. It seems scarcely possible to doubt that the saburral state, as it is absurdly enough termed, or the catarrhal state of the gastric mucous membrane, is indeed the remote or ultimate effect of chronic inflammation of that membrane. With regard to the vascular, the natural, or the pale state of the membrane, associated with this catarrhal condition, it must be observed that so long as the mucous surface is still red and injected, the mucus adheres to it very firmly, and appears to be formed in it chiefly to protect the red, raw, and morbidly sensible surface from the unfavourable or hurtful impressions of food and drink. When, however, the membrane is less red, and the congestion begins to abate and subside, the mucus no longer adheres so closely, and is liable to be detached, and either brought up by vomiting, or more or less digested, and carried into the bowels. It appears to be chiefly in this stage of the disorder that the gastric mucous membrane is pale and bloodless.

These views regarding the cause of excessive mucous secretion from the stomach must, if well founded, render it quite unnecessary to form, as the author has done, another division or variety of this complaint under the name of *gastrorrhœa*. In this term, indeed, we can discover nothing else but a different name for the disorder already considered; and we confess it appears to us that there is no ground for a separate head under that name. This will appear quite manifest by comparing the accounts given of the state of the stomach in both disorders, at p. 81, and afterwards at p. 97.

The remedies believed by authors to be most useful in removing this condition of the stomach, and relieving the symptoms connected with it, are emetics either by ipecacuan or tartrate of antimony, aperients, antacid absorbents, as magnesia, chalk, bismuth, and lime-water, mercury and chalk, morphia in solution or in substance, and sulphate of quinine or iron, nearly in the order now specified. In those instances in which the distemper is attended with pain, leeches over the epigastric region, or a blister applied several times, may be beneficial. Acetate of lead and opium have been also used with advantage.

The absorbents and antacids appear to be mostly indicated in those forms of the disease in which, as the present author believes, large quantities of free acetic and hydrochloric acids are contained in the mucus secreted.

The stomach is rarely disordered in any degree, and is never disordered long, without giving rise to more or less disorder in other organs. This secondary affection of other organs depends sometimes on contiguity or anatomico-pathological connection, sometimes on sympathy, and sometimes on other causes, not very distinctly perceptible. It hence results, that in practice, the physician observes disease of the stomach gives rise to secondary affections in the liver, in the lungs, in the heart, and in the brain. It might be also observed, that sometimes the secondary affection of various remote but connected organs may be so considerable, as to obscure or disguise the primary distemper of the stomach from which it originated. Mr Parker considers first the physiological influence and then the pathological influence of the stomach upon these different organs.

The first organ which demands attention in this respect is the liver, which, partly from its contiguity, partly from similarity of function, partly the direct connection of its vascular system, especially the veins, with the stomach and intestinal tube, begins early to evince marks of disorder. Though not positively stated, it is evidently understood that the liver becomes congested or gorged in its vascular system, and even hypertrophied or enlarged and over-nourished; and of this the main cause is stated to be the previously excited or preternaturally vascular state of the gastric mucous membrane. The increased demand made upon the secretion of the liver, by the increased quantities of food taken by those, when the gastric mucous membrane is over excited, the author regards as the main cause of hepatic congestion.

The notion of Ribes, that this secondary irritation is propagated by the medium of the veins from the stomach to the liver, is extremely probable; though he appears to carry this doctrine to a great extreme, when he impresses the inference that even inflammation may extend from the stomach and intestinal tube along the mesenteric veins to the liver. Physiological irritation, and, perhaps, mechanical distension, from the transmission of unusually large quantities of blood through these veins, seem to be all that can reasonably be imagined to ensue in such circumstances. "Persons in the habit of consuming large quantities of food, keep the mucous surface of the stomach constantly turgid with blood. This state is the first form of inflammation, and explains the remark made by Portal, that great eaters have invariably large or hypertrophied livers. In such cases, the tongue is generally dry and foul, its papillæ developed, and the epigastric region hot and tender."

The physiological influence of the stomach upon the lungs, Mr Parker refers chiefly to the anatomical fact of both organs being under the influence of the same nervous trunk and branches, viz. the pneumo-gastric; and he adduces in illustration the usual facts recorded by various authors, in order to establish the inference, that irritation of the gastric extremities of the pneumo-gastric nerves, may be, by reflex action, conveyed to the trunk, and thence propagated forwards to the pulmonic extremities and the substance of the lung, so as to affect the integrity of that organ. These facts are the acceleration of the respiration after hearty meals, the presence of cough from irritation of the stomach, and the hurtful effects of irritating articles of food on the actions and properties of the lungs.

Another mode in which the author accounts for the same influence is by irritation of the diaphragm.

The influence of the stomach on the heart he explains in different modes. *First*, it seems to be mechanical in certain circumstances, as when the stomach, distended with food or air, contracts the cavity of the chest, and thereby prevents the free discharge of blood from the right side of the heart, and renders the action of the organ irregular. In the same manner, persons who pursue occupations requiring a contracted or folded state of the trunk, and especially literary persons, tailors, shoemakers, &c. suffer in this way from the stomach being pressed against the diaphragm. In the *second* place, this influence may be more or less physiological; that is, when the vascular system of the stomach is excited or stimulated, it may in like manner over-excite the action of the heart, or render that action irregular, as well as violent. The irritability of the heart is in this instance augmented by the increased irritability of the stomach.

The influence of the state of the stomach and intestinal tube upon the brain has been long observed and recognized to be very considerable; and, indeed, it is one of those conditions which most frequently takes place, and is most conspicuously evinced, in persons not very robust, and whose delicacy of constitution is associated with delicacy, mobility, or susceptibility of the nervous system. It is known especially that the healthy state of the stomach exercises great influence on the clearness and vigour of the intellectual faculties, on the state of the mind as to cheerfulness or gloom, on the temper, and various other moral qualities. We may subjoin the observations of Mr Parker on this connection, as an instance of the mode in which he treats the subject.

"When the sensibility of the mucous surfaces of the stomach becomes deranged from fulness of blood (hyperemia), from chronic inflammation, or from other causes, the influence upon the brain becomes much more varied and marked. In such instances we have occasionally, after a full meal, a loss of some or the whole of the mental powers; in some, depression; in others, fits of excitement. The functions of the senses become impaired or exalted; some see spectres or visions, and others are profoundly stupid. In many instances apoplexy, epilepsy, or effusion, succeed to the gastric irritation. Of all these forms of sympathetic affections of the brain I have seen, and shall detail, examples.

"It is notorious," says Cabanis, "that in certain states of the digestive organs we are more or less capable of exercising the intellectual faculties." In the sympathetic affections of other organs which accompany diseased conditions of the lining membrane of the stomach, varied conditions of the mental powers are some of the most frequent. In some persons, where the powers of the mind are naturally acute, they are singularly depressed after a full meal; some lose the faculty of thinking at all, others become deficient in judgment, and in others, again, memory is quite lost. I was called to the case of a gentleman, in the course of last year, who was suffering from a sub-acute inflammatory affection of the stomach, who completely lost the faculty of memory after taking a tea-cupful of food; yet this patient was remarkable for his mechanical genius. A less portion of food did not impair his mind, which invariably became more powerful and clear from leeching or fomenting the epigastrium.

"So intimate is the connection between the brain and stomach, that it is rare not to see some change produced in the functions of the former by every impression made upon the mucous membrane of the latter; these changes, however, vary with the natural constitution of the mind, and the varied states into which it is thrown by the circumstances which act upon it.

"Extreme mental depression is one of the most frequent attendants upon chronic or sub-acute inflammation of the stomach, or upon that congested or excited state of its mucous membrane which follows the ingestion of aliment bad in quality or excessive in quantity. Sometimes these states of mind continue during the whole progress of the gastric disease; at other times they succeed to, or are aggravated by, a meal; and, again, I have frequently seen them induced by strong aperient medicines. Fits of great mental excitement, on the contrary, occasionally succeed to diseases of this character; and where the disease is protracted, in mental constitutions so predisposed, it frequently terminates in confirmed insanity. I have detailed one or two remarkable instances of this kind in my paper 'On Stomach Diseases and their Sympathies,' in the *Dublin Medical and Chemical Journal* for September 1835. In that paper I have also related the case of a gentleman who had intense headach dependent upon an inflammatory condition of the stomach, who imagined that the paroxysms of pain were produced by a black bird flying against his head.

"The influence of the stomach upon the brain is not confined merely to the waking state; it is equally marked during sleep. Persons thus suffering we find constantly troubled with dreams of an extremely vivid and intense character; in fact, so perfect are the scenes of many of these dreams, that they appear to the patient rather the impressions of a waking hour than the delusions of a dream.

"Let us examine for a moment the state of the organs in which these functional derangements take place. Richond and others assure us that, if the brains of persons dying from gastric diseases be carefully examined, we shall find numerous pathologic changes: the arachnoid thickened or injected, separated from the pia mater by effusions of serum, pus, or blood; the sinuses and veins of the substance of the brain fuller of blood, and more numerous than in the healthy state; and the brain itself commonly altered in its texture, being sometimes harder, at others softer, than in the natural condition.

"If we carry our inquiry to the examination of the functions of organs during life, we shall find that increased vascular excitement is commonly determined in the heart and great vessels, and consequently in the brain, by diseased conditions of the stomach; strong beating in the epigastric region, increase of force, though not always of frequency, in the heart's actions, and a similar excitement in the carotid and temporal arteries. This state of the circulation is accompanied by increased heat of the head, and all the symptoms become aggravated during the accession of those depending upon the affection of the stomach. During fits of the deepest mental despondency this increase in the force of action in the arterial system is commonly present, vascular excitement by no means bears a strict relation to mental excitement in these forms of disease: such is the different effect produced by stimulus upon brains or minds differently organized."—Pp. 118—121.

Mr Parker considers then the influence of morbid states of the stomach upon the origin, progress, and termination of diseases of the liver, lungs, heart, and brain.

In considering the origin and progress of diseases of the liver in this light, he distinguishes two stages, one, the primary or early stage of symptoms of disease of the liver; and the other the symptoms attendant on advanced stages of diseases of the liver. Those referable to the first head are either of the following: 1*st*, the condition characterized by mere hyperemia; 2*d*, a state of chronic or subacute inflammation; and, 3*d*, one of acute inflammation. The habitual use of spirituous liquors is a remarkable example of the facility with which this irritation in the gastric mucous membrane gives rise to congestion, enlargement, and hypertrophy, or even change of structure in the liver. The irritation then seems, as is thought by Andral, to be propagated from the veins of the stomach to those of the liver.

In the advanced stages of disease of the liver the attention of the pathologist is directed to other views. Though hypertrophy or chronic inflammation of the liver may in the early stage be the consequence of vascular or congestive irritation in the mucous membrane of the stomach, yet in the advanced stage, the direction of the reaction may be altogether changed, and disease of the liver may give rise to vascular congestion and irritation in the stomach. This always implicates the different orders of morbid phenomena; for the disease of the stomach thus produced may of itself give rise to disease of the heart, the lungs, and the brain. In illustration of the pathological principle now mentioned, the author adduces cases in which disease of the liver was associated with, or rather gave rise to, disorder in the action of the heart, and even eventually serious changes in the structure; and various disorders in the functions of the lungs, as rapid panting breathing, cough, or the symptoms of inflammation of the lung, the pleura or the bronchi; and tending to establish the general accuracy of the proposition now stated. It is difficult to determine in all cases whether the affection of the stomach precedes that of the liver, or the disorder of the liver precedes that of the stomach. This difficulty may take place in any one of the disorders of the liver; but it is said to be most common to cancerous degeneration, whether hard or soft, to be preceded or accompanied by symptoms indicating a morbid state of the mucous membrane of the stomach; and most commonly the change has been shown by the researches of Cruveilhier, Berard, and others, to take place simultaneously in both organs.

The author closes this chapter (eighth) with observations on the influence of morbid states of the stomach in the formation of biliary calculi. His views on this subject may be collected from the following extracts.

> "In most persons dying from gastric diseases, or from other diseases in which there is a serious complication of morbid conditions of the stomach, we find the contents of the gall-bladder altered in their character, and very commonly the lining membrane of this or-

gan itself inflamed, softened, or otherwise diseased. In these states the contents of the gall-bladder are generally of extreme viscidity; the bile is black, resinous, adhesive, much thicker than in its natural state, and of a deep-black colour. I have noticed this condition of the bile in almost every instance I have examined after death from gastro-hepatic disease. Similar facts have been noticed by Portal and others."—P. 162.

"If we inquire, for a moment, into the nature of the symptoms which precede the formation of biliary calculi, we shall find them, in most instances, limited to those which indicate a disordered or diseased condition of the stomach—which characterize either vascular or nervous irritation of that organ. I possess notes of cases of death produced by biliary calculi obstructing the cystic and common ducts, which have been preceded by symptoms of inflammatory indigestion for twenty or thirty years. Sometimes the symptoms of disease observed in the stomach are purely of the inflammatory kind; in others they are marked by attacks of acute pain, recurring at longer or shorter intervals; but in all the cases I have had opportunities of examining after death, more or less disease of the inflammatory kind has been observed in the stomach, as well as the consequences of inflammation in the liver. Bonet contends for the gastric origin of biliary calculi, which he conceives to arise from irritation originally seated in the stomach, thence propagated to the liver, which, causing alterations in the nature of its secretions, terminates in the formation of gall-stones. The same view is sustained by Jolly, who attributes their origin to alterations of the secretions of the liver, determined by the inflammatory state of the secreting organs."—Pp. 163, 164.

These views are still further expanded in the concluding observations.

"If we inquire carefully into the symptoms which precede the formation of biliary concretions, or the existence of hepatic irritation, we shall find them commencing with gastric affections, evidenced by various symptoms connected with, and dependent upon, inflammatory irritation of the mucous membrane of the stomach; and it is to the propagation of disease, by contiguity of tissue, from the mucous membrane of the stomach to that of the duodenum, and thence, through the common duct, to the cystic and hepatic, that may be attributed many of the diseases of the excretory passages of the bile. We see, in all the preceding cases, symptoms of gastric irritation preceding the formation of gall-stones for a longer or shorter period. In the first case marked symptoms of an inflammatory condition of the stomach had preceded the discharge of gall-stones per anum for twelve months. In the second and third cases this state of the stomach had been present for many years; in the second case the patient had suffered from stomach derangement for twenty-five years. The subject of the third case commenced suffering at twenty; he died at the age of fifty-seven, and had been seeking relief from his disease during the whole of that time. For the last three or four years a week did not pass without my seeing this patient, and I most minutely questioned him on the whole history of his disease. In all the other cases we find symptoms of a diseased condition of the lining membrane of the stomach to have been first in existence. Loss of appetite, pain, weight, and heat after food, vomiting, and epigastric tenderness, were more or less present in each case; and though the patients sunk from the secondary disease—that of the gall-bladder and its appendages—we find extensive organic mischief, in every single instance, in the stomach and first passages. Not only do we notice the symptoms of stomach derangement during life, but lesions in the suffering organ after death, by which the symptoms observed during life are explained. The diseases of the stomach which precede these formations are of the inflammatory kind, most probably commencing in mere hyperemia of the stomach, the result of over-stimulation, from moral or other causes, and thence progressing into confirmed chronic gastritis, terminating, as in the fourth and sixth cases, in organic change. In the third case the patient died from the stomach disease alone, by the passage of the inflammation from the chronic to the acute state. The existence of any biliary concretions was not suspected during life, yet after death we find alterations in the character of the bile, and several large concretions in the gall-bladder. In other instances the terminations of gastric diseases are not in the organs which produced them, as in some examples in the preceding cases. Thus, in one instance, we see the patient sinking from obstructions of the gall-ducts; in a second from a biliary concretion obstructing the jejunum. These concretions are produced under derangements of the liver and its secretions which evidently originated in the stomach, this organ furnishing symptoms of derangement for years before any affection of the liver or its appendages was suspected. It is this termination of inflammatory irritations of the stomach in diseases of other organs which should render us so watchful of their progress.

"It is not the affection of the stomach in itself which ought to demand our watchfulness, so much as the influence the latter exercises over the origin, progress, and termination of diseases in other organs. On the other hand, a knowledge of the nature and treatment of the morbid conditions of the stomach is essentially necessary towards the successful management of a vast number of diseases, which, although of a more prominent character than mere gastric irritations, are nevertheless produced by, and strictly dependent upon, them."—Pp. 168–170.

In the ninth chapter it appears to us that the "certain forms of dropsy which are influenced by disease of the stomach," though occasionally referable to the head of disease of the liver, are also often referable to that of disease of the kidney. Mr Parker very properly makes use of the facts previously adduced, to prove the existence of an inflamed condition of the mucous membrane of the stomach commonly preceding disease of the liver and heart, in order to direct the attention of the reader to the effusion within the *peritoneum*, which almost invariably terminates both diseases; and he further, with great propriety, recommends as the most effectual method of removing the dropsical symptoms, the removal of the symptoms of *gastritis* in the most speedy and effectual manner. Of course, whenever there are distinct symptoms of hepatic congestion or pain in the right hypochondriac region, fulness or swelling, no doubt can be entertained as to the cause of the dropsical effusion.

But there is another class of dropsical cases in which the stomach is irritable, and sickness and vomiting ensue, in which it cannot with the same certainty be said that these symptoms indicate the presence of *gastritis ;* for the same irritability of stomach is a very common symptom in the albuminous or whitish-gray degeneration of the kidney ; and even in its early stages these symptoms are so common, that it is not unreasonable to presume that, in certain circumstances, they indicate the presence of the incipient or inflammatory stage of the disorder. We know not that it can be maintained that the mucous membrane of the stomach is then in a state of inflammation ; for the sickness and vomiting which so uniformly take place, seem either to be the effect of the sympathetic influence of the kidney upon it, by the nervous twigs of both coming from the same common source, or the result of irritation from the presence of urea in the blood, when the kidney does not convey it out of the system in the full amount. But whatever be the cause, the fact is undeniable, that sickness and vomiting, with uneasiness or tenderness in the site of the stomach, are not uncommon in this disorder, even at its early stage. In order to cure these symptoms, the author properly observes that the most effective method consists in depletion from the system, and locally from the epigastric region; that all diuretic remedies are too often inefficient previous to depletion ; and that, generally, after their use the diuretic effects begin to take place. It is certainly in the same disease that foxglove is administered either without effect or with bad consequences, until the symptoms of gastric irritation have been removed previously by suitable evacuant and other remedies.

The influence of morbid states of the stomach upon the origin, progress, and termination of diseases of the heart, is not less important. Mr Parker shows that all inflammatory irritations in the stomach do not equally affect the action of the heart ; and that the latter organ is most liable to be disordered, and is most intensely disordered when the cardiac portion of the gastric mucous membrane is diseased or irritated. This affection of the heart may appear either in the violence or morbid force of the impulse, or in the derangement of the rhythm of its action, as in irregularity, tumultuous action, or intermission. It is further remarkable that these actions may be so violent and so well-marked as to assume the appearance of organic disease; even the breathing becomes oppressed, panting, laborious, and orthopnoic ; the lower extremities become œdematous from interruption to the free return of blood through the heart; and even the fatal termination may ensue; yet no changes may in such cases be found in the heart adequate to account for the irregular action; and all the morbid appearances are confined to the stomach alone. Of this curious misplacement of symptoms, the author gives instructive instances from his own experience and that of Cruveilhier.

In other instances the gastric irritation is associated with actual disease in the heart, viz. hypertrophy; and it is difficult to say whether the gastric disorder induces the disease of the heart, or the latter induces the disease of the stomach, or both are co-existent effects of one common cause. Thus the heart is sometimes found in a state of hypertrophy with thickened firm walls, and sometimes in a state of atrophy with soft, friable, lacerable substance, along with the usual phenomena of *gastritis*; and though irregularity, or intermission in the cardiac action, and dicrotous pulsation in the arteries be not uncommon symptoms in those affected with gastritis, yet genuine valvular disease appears to be rare.

Regarding the relative position of the disease of the heart to that of the stomach, it must be further observed, that diseases of the heart which impede the circulation through the chambers of the organ have a great tendency to induce a highly congested and gorged state of the veins of the stomach, and through these of its entire capillary system. In this case, therefore, care must be taken not to consider as the cause of the disease of the heart that gastric congestion which is manifestly the effect of that disease.

> "When any impediment is offered to the free passage of blood through the heart, either from frequent irregularities in the action of this organ without any apparent disease, or from disease either of the acute or chronic kind, the mucous membrane of the stomach becomes the seat of certain morbid changes, which are dependent upon the mechanical obstacle to the circulation, presented by the disease of the heart. These may consist in mere redness, the result of congestion, or pure inflammatory affections, in which there are marked changes in the colour and consistence of the gastric mucous membrane."—Pp. 204, 205.

The same views have been taken by Broussais and Andral, and several other pathologists.

> "The congestion or stagnation of blood alone, in the veins and membranes of the stomach, is sufficient, without any other cause, to disturb its functions, to render the process of digestion laborious, and to produce sympathetic affections in other organs of the body; but the disturbance of the digestive process, and the sympathetic affections which accompany it, are commonly more severe when other changes, resulting from inflammation, have been produced. It is most probable that the first morbid condition, produced in the

coats of the stomach by diseases of the heart, is an accumulation of blood in its veins and mucous membrane, the result of a mechanical obstacle to the passage of this fluid through the heart; the constant presence of food and stimulating medicines, upon a membrane already irritated, convert what was at first a mere congestion into inflammation."—Pp. 205, 206.

The influence of morbid states of the stomach upon the origin, progress, and termination of diseases of the lungs, has long occupied the attention of physicians, and is a subject both curious and important. On these points, the observations of Mr Parker are valuable.

> "We sometimes find," he says, "persons who have no appetite, a foul tongue, a disposition to a relaxed, and other times to a constipated, condition of the bowels, complaining of pain and oppression in the centre of the sternum and fore part of the chest, with a dry irritating cough, which becomes invariably aggravated by a meal.
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> "The epigastrium in many cases of this kind is not at all sensible to pressure; it may be handled and pressed without any uneasiness being produced. In other instances, however, epigastric tenderness co-exists, but it is not essential to the existence of chronic gastritis or hyperemia that it should do so."—P. 239.
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> "In other forms of disease, the acute form of inflammation of the stomach is never assumed. Thus we see, in delicate females, the cough after food, with pains in the chest, masking all the symptoms of gastric disturbance, which are often obscure, continue month after month, with progressive emaciation. If auscultation be not understood by the practitioner in attendance, it is difficult, nay, impossible, to determine whether the disease be pulmonary or not. It is concluded that it is so, since the symptoms of such disease are well marked, stimulant expectorants, or tonics, are resorted to, which only aggravate the symptoms, and the patient sinks from a suspected chest affection, which, on examination after death, is found not to exist, and the seat of the disease is found to be the stomach. Broussais' cases are examples of errors of this kind: he was deceived in all three cases, merely suspecting that the disease which appeared bronchial, in the last case, might possibly be gastric. The first case of the fifteen given in this part of the work is a well-marked example of the irritation which arises in the lungs, the consequence of inflammation of the stomach, whilst the proper and customary symptoms of the gastric disease are masked or altogether absent. Many of the cases of gastritis recorded by M. de Larroque, in his work *On Diseases of the Abdomen which simulate, produce, or keep up Diseases of the Chest*, were marked by this peculiar symptom of dry cough, increased by taking food.
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> "Accelerated respiration is another symptom observed in the functions of the lungs, which is dependent on disease in the stomach. In many cases, even where cough, pain, and tightness exist in the chest, the number of respirations are not at all quickened; the patient can inspire deeply without pain, or without increasing

the cough. But in other instances the breathing is quickened; there is a peculiar catching at the breath, a deep inspiration occasions pain, and brings on cough. These symptoms, still more than those we have been considering, appear to indicate pulmonary disease; yet still these are found to depend on gastric inflammation, and no physical sign of disease in the lung can be observed to account for the production of these symptoms. We have commonly observed children to be suddenly seized with fever and short breathing, precisely resembling the rational signs of pneumonia; yet, in analyzing the state of the organs in the chest and belly, I have been convinced that this hurried breathing, with catching, when the diaphragm was depressed by an inspiration, depended upon inflammation of the mucous coat of the stomach, and not upon any lesion of the organs of respiration. Sometimes, in these cases, children will complain of pain in the belly; at others there may be vomiting present; or diarrhœa, with green, frothy, offensive, or parti-coloured evacuations. Again, all these signs may be absent, the difficulty of breathing present, yet no physical sign indicating an affection of the lung. In such instances, I agree with De Larroque that the vivid redness of the point and edges of the tongue, with the general fever, are the chief indications of gastric inflammation. I have noted numbers of these cases occurring in children, continuing for a shorter or greater length of time, and exasperated or not amended by medical treatment, cease promptly on the application of one or two relays of leeches to the epigastrium.

"The chief symptoms, then, of the commencement of pulmonary irritation, as a consequence of gastric disease, are dry cough, increased by food during digestion, and by stimuli; pain on some point of the thoracic parietes, oppression, constriction of the chest, with accelerated or irregular respiration. These may exist with gastric irritation, and without any evident affection of the lung to account for them; or they may be found with both pulmonary and stomach disease. We will inquire for a moment into the mode of their production.

"When inflammation of the mucous coat of the stomach becomes a source of irritation to the lungs, it may be propagated in several ways: 1. The existence of dry cough with irregular states of the respiration appears to depend on irritation of the gastric extremities of the pneumo-gastric nerve. In some instances of this kind Lobstein has found the branches of this nerve inflamed. In other forms the trunk of these nerves was enlarged and hypertrophied to a great extent, as in the fourth and fifth cases of cancer of the stomach related by Dr Lombard, of Geneva. In most instances of this kind the disease appears limited to mere irritation of the pulmonary branches of this nerve. 2. Irritation may be propagated from the stomach to the lungs, in accordance with that law which disposes diseases to spread by similarity of tissue; and thus we find, after death from gastric inflammation, accompanied by cough or other symptoms of derangement in the organs of respiration, a pinky, congested, or inflamed state of the bronchial mucous membranes. This explains also the bloody expectoration observed during acute forms of gastritis, and the profuse hæmoptysis to which they sometimes give origin, which, in many instances, marks the first invasion of phthisis. This bloody expectoration was well marked in the fourth case; and an example of hæmoptysis thus produced, and terminating ultimately in phthisis, is exemplified in a case quoted from Andral in the notes to the thirteenth case, one of phthisis succeeding to inflammation of the stomach. 3. The affection of the chest may depend upon an inflamed condition of the peritoneum lining the inferior surface of the diaphragm. De Larroque has reported a case, in which such a condition of the diaphragm, coincided with severe gastric inflammation.

"Where the affection of the lung commences, as it most commonly does, in mere nervous irritation, it does not long continue in this form, since the violent fits of coughing and the continuance of irritation ultimately induce a congested, and subsequently an inflamed condition of the mucous membrane of the bronchiæ, of the substance of the lungs, or the pleura. We have examples of most of these states coinciding with, or succeeding to, gastric diseases, in the detail of the preceding cases. Thus, in some were observed a true bronchitis; in others, a congested state of the lung, without inflammation; whilst, again, the signs of pneumonia were present. These facts teach us to note well the progress of the symptoms, both physical and rational, which accompany cough and disordered respiration evidently of gastric origin, since, in many forms, the disease in the lung is not limited to mere nervous irritation, but quickly and insidiously progresses into various inflammatory affections, which, if there be a tubercular tendency, may ultimately degenerate into phthisis."—Pp. 240—244.

He then establishes the two following conclusions:—

"1. Inflammatory irritations of the digestive organs are readily, under certain circumstances, transmitted to the lungs, where they may become the source of various diseases, as cough and disordered respiration, bronchitis, pneumonia, hæmoptysis, and even tubercular phthisis. 2. Diseases of the lungs are frequently complicated with an inflamed condition of the stomach; and in framing a treatment for the relief of the former, we should be careful to avoid the use of remedies which would exasperate the latter."—P. 253.

The subject of the influence of morbid states of the stomach upon the origin, progress, and termination of the affections of the brain, though less new than either of the former, is examined with care and attention. Our limits will scarcely permit us to do more than notice the results which he has obtained.

"The morbid states of the stomach which most materially influence the condition of the brain are three:—

1. Inflammatory states.
2. Diseases of its sensibility.
3. Disordered states of its secretions.

"In practice, however, none of the states will be found single and uncombined. We find the inflammatory state constantly existing with the disease of sensibility, and the disordered state of the secretions sometimes depending upon inflammation, and in others, due to different forms of nervous disease in the stomach.

" The affections of the brain which succeed to these forms of irritation in the stomach are various, and may be classed in the following order:—

" 1. Evanescent stupor, or drowsiness.
" 2. Coma.
" 3 Fatal forms of cerebral congestion.
" 4. Effusion.
" 5. Convulsions.
" 6. Variations in the conditions of the intellectual powers.
    a. Excitement, delirium.
    b. Melancholy, depression.
    c. Loss of one or more of the mental faculties, as memory, &c.
" 7. Alterations in the functions of the senses.

" The brain appears to be influenced through the medium of the stomach, in most instances, by the direct transmission of irritation from one organ to the other. The relations between the mucous membrane of the stomach and the brain are so intimate, that we find if the circulation in the stomach be accelerated, if this organ be in a state of hyperemia, or active congestion, the same state is produced in the brain. Whatever excites the stomach quickens the circulation in the latter organ. These remarks are well illustrated by some of the preceding cases, and it is from this circumstance that we find persons subject to stupor, and great drowsiness after eating, become suddenly apoplectic after a meal. Richond has recorded three cases, and I have detailed two of patients becoming suddenly apoplectic, or comatose under the influence of gastric irritation, which had suddenly assumed an acute form.

" We must remember, as Broussais has very justly remarked, that neither medicine nor food can influence the condition of our organs except by modifying the condition of the stomach. And he assures us that when we observe the eyes, and the face redden from intoxication, it is because the mucous membrane of the stomach has itself first suffered from this state. It is, however, when the stomach, previously morbid, is thrown into a state of increased irritability by food greater in quantity than the digestive powers can easily dispose of, or of a nature which is not easily acted upon by the secretion of the stomach, that we observe the forms of sympathetic irritation in the brain that I have already noticed.

" It is in these circumstances, more particularly, that we observe the brain sympathizing with the stomach, and remark those infinite variations in its functions which follow a meal, in patients suffering from the varied forms of gastric irritation. The brain sympathises with the stomach very readily, when the former organ is healthy, and the latter diseased; but, when the brain is previously diseased, we observe sympathetic irritation to be still more readily excited in it by a diseased stomach, and, under such circumstances, the affections of the brain very quickly assume an alarming, and even fatal character.

" When the brain once begins to sympathise with an irritable stomach, and we witness alterations in the function of the latter organ such as drowsiness, headach, succeeding a meal, or an attack of indigestion; we shall find that the least circumstance determines a repetition of the irritation, and hence is it that the symptoms observed in the brain recur more or less after every full meal, whilst the gastric irritation lasts. It is this continued repetition of slight irritations, which ultimately lays the foundation in the brain of organic changes, appearing slight perhaps to the mere pathologist, but which by the irritation they produce in this organ terminate ultimately in fatal effusion or congestion, when the morbid state of the stomach, from some accidental cause, becomes suddenly worse. Case 5 is an illustration of the correctness of these remarks. Most of the cases, also, collected and recorded by M. Richond in his work *On the Influence of the Stomach upon the Production of Apoplexy*, corroborate the importance of this proposition.

"The organic changes determined in the brain by continued or constantly repeated gastric irritation are various; they are more commonly found to consist in opacities of the arachnoid, effusions of turbid serum and states of increased vascularity of the substance of the brain. It should be borne in mind, that diseases of the stomach destroy life not so much by the changes produced in the organ itself, as by the sympathetic diseases which are established in the course of years, in other organs, by continued or constantly repeated irritation in the stomach. The stomach is necessary to life, from the circumstance that by it the nutritive fluid is prepared which supports life. All persons, however, conversant with pathologic researches, are aware that the function of digestion is sometimes well performed by a stomach frightfully disorganized, and we have no supposition of the existence of disease until anatomy reveals it to us. Persons not at all emaciated, and in whom all the functions appear to be properly performed, have occasionally extensive disease of the mucous membrane of the stomach. It is by the reaction of the stomach upon other organs that life is commonly destroyed; by the production of diseases which tend to fatal terminations in organs more important to life than the stomach, as the lungs, heart, and brain."—Pp. 278—281.

Of the chapter on treatment, with which the volume is concluded, we cannot expect to give any intelligible abstract, without very nearly transcribing the language of the author. We therefore refer our readers to this for details; and we may say that the chapter requires, and will reward, attentive and deliberate perusal.

The present work is one of great importance and much value to the medical practitioner. Its chief merit consists in directing attention to various morbid conditions of the stomach which have been hitherto either imperfectly known or wholly misunderstood, and in explaining more fully and systematically than has yet been done, the influence of the morbid states of the stomach in inducing disease in other organs of the body. This task the author has performed with much ability; and his work is one which, while it deserves the serious attention of the medical practitioner, will form an instructive treatise to every medical reader.

Art. IV.—*An Inquiry into the Propagation of Contagious Poisons by the Atmosphere; as also into the Nature and Effects of Vitiated Air, &c.* By S. Scott Alison, M. D. Tranent. Edinburgh, 1839. 12mo. Pp. 219.

In bringing the subject of atmospheric contagion before the public, Dr Alison mentions that he was induced to do so from the following considerations:

> "1. That there prevails among the public, and especially among the relations of the sick, much unnecessary alarm on that subject. 2. That much injury is inflicted upon the poor patient, who is often made to suffer great and cruel privations, from the neglect and desertion of friends in a state of panic. 3. That a great obstacle to the progress of medical science, is raised up by the belief in the existence of atmospheric contagion. 4. That there exists relative to that subject, much confusion, from the misapplication of terms."

The whole of the first chapter of the author's inquiry is directed to demonstrate the truth of the two first propositions,—propositions which no one will deny, but which, however true they may be, afford little aid in proving either the existence or non-existence of a contagious effluvium.

Dr Alison sets out with the view of establishing the inference, that disease cannot be propagated from the sick to the healthy by means of an atmosphere saturated with contagious effluvia, or, to use his own expression, that atmospheric contagion has no existence. These opinions are by no means novel. Though brought forward as the result of his own observation, study, and reflection, almost every argument which he uses has been stated by Dr Pye, Dr Arbuthnot, Mr Dale Ingram, Dr Maclean, Alder, Larrey, Pugnet, Savaresi, Assalini, and the numerous other writers who have espoused the same views. The statement, therefore, that the progress of medical science has been much impeded by the belief in the doctrine of atmospheric contagion, as he improperly calls it, requires to be received with some modification; for though such a doctrine has afforded to some a tolerably easy solution of the propagation of specific diseases, to others it has presented insuperable difficulties. The subject of contagion has, besides, occupied the attention of all the celebrated medical authorities, which sufficiently evinces that it was not want of examination, nor the want of capacity to conduct that examination with skill, which has retarded the progress of medical science in this respect. With regard to his last proposition, it must be allowed that considerable confusion and inaccuracy, both in thought and language, has prevailed on this subject; and we should like to see the question treated with greater precision and correctness.

The expression Atmospheric Contagion, Dr Alison proposes to restrict to the principle or vaporiform agent by which the propagation of a contagious poison from a sick person to a living one through means of the atmosphere, is believed to be accomplished.

Contagion he defines to be "that property which matter eliminated in a body suffering under disease has of producing the same disease when applied to another in a state of health, as the matter of small-pox;" that is, we suppose, by inoculation. But he immediately subjoins, "contagion is also used, and will be employed here to denote the matter itself, which we have just defined." From this it will be seen that the author has rather loosely and improperly applied the term contagion both to the matter, and to the property of that matter. Matter, that is purulent matter, cannot be said to be contagion, or as mere matter to be contagious. It is indeed the vehicle of the contagious principle, and as such is capable of communicating the disease. Only a very few of the diseases usually denominated contagious secrete matter, which, when applied by inoculation to a healthy person, is capable of propagating the disease. Where is the matter he speaks of in all the others? Yet they evidently possess the same contagious properties. It is desirable that it should be understood, that the matter of plague, variola, and varicella, does not, as mere matter, possess the power of propagating its specific disease, but only in virtue of containing and conveying, as is now stated, the contagious principle or poison of the disease. The inflammation of the skin or subcutaneous tissues attending these complaints follows the same general course as it would do, if the inflammation arose from other causes; but in virtue of the specific poison in the system, the matter formed during the continuance of the disease, acquires properties which render it capable of communicating the same disease, if inserted into the skin of another. The contagious poison, therefore, is one thing, and the matter containing it is another, and they ought never to be confounded together. Rayer mentions "pus and miasm" as two distinct agents which ought not to be confounded. If the contagious effluvium and the matter of the pustule were one and the same thing, how could we account for the circumstance of the *fœtus in utero* becoming affected with small-pox? Besides, Dr Waterhouse and others have recorded cases in which persons exposed only to the exhalation from the blood of small-pox patients have been afterwards attacked by the disease.

Dr Alison considers contagion, as he has defined it, under three heads, 1. The direct application to the body of palpable contagious matter,—inoculation. 2. The application to the body of clothes, and the like, impregnated with contagious matter,—fomites. 3. The application to the body of air holding in solution contagious matter. The two first of these, he admits, as proved beyond a doubt; it is the existence of the third form only which he altogether denies, and to the examination of his reasons for adopting this opinion we next proceed.

The arguments used to establish the non-existence of what he calls atmospheric contagion are sufficiently plausible. He says "it has never been detected;" "it has certainly never been unequivocally manifested to any of the external senses; it has never been seen combined with the atmosphere, precipitated from it, or abstracted therefrom to solid bodies." This is all very true, excepting, perhaps, with regard to the sense of smell. But Dr Alison should in common candour admit, that the very same arguments apply to miasm and vitiated air of all kinds, which last he himself endeavours to prove, is the source of all contagious diseases. Guyton Morveau found that air so full of noxious exhalations that it could not be breathed, without causing headach, vertigo, nausea, &c. scarcely differed in any respect, so far as chemical analysis showed, from common air; and yet the sense of smell detected an exceedingly unpleasant odour. The same reasoning will apply also to air loaded with odorous emanations of all kinds; for it is in this light that effluvia from the human body must be regarded. No one has ever been able to see any of these, or handle them, or weigh them, or precipitate them from the air.

It would nevertheless be unreasonable to deny the existence either of aeriform exhalations or of air containing contagious principles merely because they cannot be rendered perceptible to sense. Upon the same principle, and in the same mode of reasoning, Dr Alison would deny the existence of gravity, because the separate existence of that agent cannot be shown. Dr Alison, however, must surely admit that the existence of an agent may be inferred from its effects, especially when these effects cannot be rationally explained in any other mode. The usual mode in which the existence and operation of contagion is admitted is the following. In certain diseases we observe great numbers of persons to be attacked successively with the same symptoms, and we observe in general that the sound are made ill, very much in the proportion of their vicinity to, or their intercourse with, the sick. It is also observed, that diseases of this description prevail only at certain times, and while at one time they are very general in a community, at others they are altogether unknown, or so little observed, that they are next to unknown. These circumstances lead both the vulgar and physicians to believe that the sick communicate the disorder, and that the sound may catch it from the sick. This mode of expression may be illogical; but still it conveys the idea meant. It implies not exactly that the disease is conveyed, but that the cause or principle of the disease is thus conveyed; and this cause or principle is the agent to which the name of contagion is applied.

The only question is, whether the facts are sufficient to justify the inference, that there is a principle of the kind now referred to, in existence in such cases? Can the phenomena be explained with assuming its existence? Can the effects be supposed to take place without the operation of the alleged cause? The effects are manifest; but the cause is unknown. Are we therefore entitled to deny its existence and to question its operation? This is the position in which the question regarding the existence and operation of contagion at present stands.

From maintaining that all animal products are fixed, and from confounding matter with the volatile contagious effluvium, the author falls into the mistake of asserting that no contagious poison can be dissolved in the air. Now all animal products are not fixed. Every substance, whatever other properties it may have, has one inappreciable to every sense but that of smell. The human body when in a state of health secretes an odour, cognizable in many cases even to our comparatively imperfect sense of smell. It is by this peculiar effluvium that the dog is able to trace its master. In many of the lower animals, the effluvium exhaled from their bodies is much more strongly developed. In short, this is a truth so evident that it only requires to be mentioned. How, it may be asked, is this odour diffused? How does it become appreciable to the senses? Surely by being dissolved by, or mixed in some way, mechanically or chemically, with that fluid which surrounds our bodies, which pervades every substance on the surface of the earth; which holds in suspension the watery vapours of the clouds; which bears the odours of the spicy forests, and the baneful miasms of pestilence and death. If a living body in a state of health exhales its peculiar odour; if even all the secretions of the body have their own peculiar smell, why should a body in a state of disease be an exception to the general rule? The fact is, that it is no exception, and though very little attention has yet been paid to this subject, sufficient has been recorded to show that diseases have each an odour *sui generis*. Thus Lind, Howard, and Russell mention that of the jail-fever and plague; Kieser and others that of measles; Haygarth and every writer on small-pox, the sickly odour of that disease; Lind and Clark, the cadaverous odour of the tropical remittent; Armstrong and others, that of typhus; Pringle and others, that of dysentery, &c. &c.

Any one conversant with the sick-room must have remarked the odour which certain diseases diffuse through the apartment, an odour so strong in variola, varicella, and measles, as to have been remarked by almost every writer on these diseases. This odour, Dr Alison considers to arise from nothing more than common impurities, "because," says he, "it is more logical to attribute this to the presence of impurities, whose presence there is no room to doubt, than to an agent whose presence under any circumstances has never been proven." The logical deduction would be that the smell arose from the disease; because it did not exist before the patient was taken ill, but immediately thereafter. Besides, in the apartments of the rich, where the greatest attention is paid both to the removal of impurities, and the renewal of the air, the same characteristic odour is invariably present in these diseases; and so peculiar in many cases are these odours, that we have heard a physician declare that he could tell the disease as soon as he entered the apartment, before he had seen the patient. Again, in variola and varicella the odour exists almost from the very beginning of the disease, long before suppuration is established, or matter formed; which shows that the poisonous effluvium is a quality superadded to the matter of the pustule after it is formed, but has no necessary dependence on it; and this circumstance is still further confirmed by the fact that contagion may be received from the sick person before the pustule proceeds to suppuration.

It may be here inquired how clothes convey the infection? The common account given is, that they are saturated with the poisonous matter. This implies either that the clothes from actual friction on the body of the person carry away a portion of the solid matter, or, what is more philosophical and consonant with fact, that the exhalations or effluvia from the body are condensed in greater quantity on them, or retained among their fibres, still held in solution by the air. Clothes which have never touched the patient become impregnated with poisonous effluvia. They must, therefore, have received their poisonous properties through the agency of the air, and if air can hold in solution or suspension poisonous effluvia, for ever so short a space, what is to prevent it carrying the same to a much greater distance. The records of some diseases* have but too fatally proved that infectious diseases may thus be carried from one individual to another, without actual contact taking place, and without the person so carrying the disease being himself affected. Thus the propagation of disease by fomites is but a variety of that where the poison is transmitted through the agency of the air alone.

But those who, with Dr Alison, maintain that specific contagious diseases cannot be propagated through the agency of the atmosphere are not even consistent in their statements. They admit that air resting over a stagnant putrid marsh, or in contact with a dead body, or with filth of any kind, becomes loaded with such noxious effluvia as to entail disease on all who breathe it; and if air can be charged with poisonous miasmata in these cases, what prevents it being impregnated with that exhaled from the living body in a state of disease?

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* Howard on State Prisons. Warrington, 1777. Lind on Fevers and Infections. Lond. 1763. Burns, Principles of Midwifery. Lond. 1809.

Dr Alison has pretty fully stated the other sources from which poisonous effluvia may arise, as from putrid marshes, corrupted animal or vegetable matters, &c. To these, particularly when combined with bad diet, inclement seasons, affections of the mind, &c. he attributes the origin and propagation of disease, He omits, however, to explain how these account for the occurrence of different specific diseases, without admitting of a specific contagion. Why, for instance, do telluric exhalations in this country only produce ague, and in warmer latitudes and under a tropical sun remittent and yellow fever? Why are the rapid transitions from extreme heat during the day to excessive cold during the night in tropical countries productive of dysentery? Why do each of these specific effects, if we may so call them, follow the specific cause? Why does the marsh miasm not produce scarlet fever or small-pox? Surely, because something more is wanting than the mere epidemic influence. Every one must allow that the American Indians and negroes on the African coast were exposed to all the varied causes of disease, before their intercourse with the whites; yet strange it is, and quite unaccountable, unless we admit of the existence of a specific contagion, that never till then was small-pox seen among them. It is well known with what frightful rapidity this malignant disease, when once introduced, spread amongst them, even almost to the extirpation of tribes.

The presence of a specific contagious principle is still further proved by what occurs in the sick-room. Visitors come to see their sick friend, and, though they keep, as they imagine, beyond the reach of danger, when they return home, they are seized with the same disease as that to whose effluvia they were exposed. If there was no such thing as a specific contagion, why are they seized with the same disease? No one ever heard of a person receiving small-pox from a fever patient, or *vice versa*. The fact of disease being thus propagated is so well authenticated, that the defenders of the opposite doctrine cannot deny it. Dr Alison endeavours to get rid of it by affirming that "those who have communication with the sick do not suffer in a greater proportion than those who keep apart;" but when he assigns reasons for this assumption, he is forced to admit, that attendants and visitors do suffer more. This he attributes to the effects of fear, want of rest, breathing vitiated air, &c. Such causes may no doubt aid the action of the poison on the attendants, but will not in the least explain its greater prevalence amongst visitors. Who ever heard of fear producing an attack of small-pox or of fever? Besides, even though fear could bring on disease, how could it always produce the same disease as that under which the sick who was visited was labouring? If the existence of a specific contagious effluvium be denied, we become involved in difficulties from which it is impossible to escape.

It is further found, that plentiful dilution with air moderates, and at length nullifies the contagious property of all poisonous miasms, both those arising from the living body, and those from the putrefaction of animal and vegetable substances; *i. e.* that when they are diluted to a certain extent, the system possesses in itself sufficient strength to resist their noxious action. Now it is a known fact, that almost all putrid effluvia or miasms lose their power of communicating disease if they have to pass over a considerable extent of country before they are breathed; and it has been proved by Russell, Lind, Haygarth, and others, that it is precisely similar with contagious diseases. Plague may be approached with safety to within four feet, and small-pox perhaps even nearer, according to Haygarth, though the whole apartment be filled with the noxious odour. Haygarth illustrates this fact in a very homely but striking way. "A pint of yeast will excite fermentation in a barrel of ale, but a hundredth or a thousandth part would not have the same effect." So it is with contagious effluvia; approach where the contagion is sufficiently concentrated, and the disease will be taken; beyond this range you are safe.

Dr Alison, however, to bear out his assertion, that there is no contagious effluvium to dread, quotes the experiments of Dr O'Ryan of Lyons, which are often erroneously brought forward, as a proof of the non-existence of a specific contagious effluvium.

"A dish, containing lint saturated with matter taken from the natural and inoculated small-pox, was placed upon a table whose diameter was three feet, and children who never had the disease, and never were inoculated or vaccinated, were placed around it, and kept there for some considerable time; yet none of them were seized with the disease. He also exposed children within two feet of a child affected at the time with the inoculated small-pox, for an hour daily, for fourteen days. None of the children were affected, and all were successfully inoculated two months afterwards."

The first of these experiments is exposed to two strong objections. 1. Matter, unless in connection with the living animal body, does not possess the power of throwing out a contagious effluvium in such quantity as to affect those in health. Of this every day's experience in the dissecting-room exhibits proofs. The student can with the same safety sit down to dissect the body of a person who has died of small-pox or of fever, as that of one who has died from any other complaint;—the only additional danger in this case arising from punctures. A case in point occurred in the dissecting-rooms attached to the Hospital of La Pitiê in the beginning of the winter 1833–4. The chief bodies supplied at that period were those of persons who had died of small-pox and of cholera; yet not one of the students were seized with either of these diseases. 2. Supposing even the dead matter on the lint had been throwing out effluvium, the distance at which the children were placed was sufficient to put them beyond the reach of danger; for very little could arise from such a small surface, as compared with that of the human body. With regard to the second experiment, we are not in possession of sufficient data to enable us to form a judgment. It is a well-known fact, that very young children are by no means so susceptible of disease as those of riper years; an infant may often be seen at the mother's breast, whilst she is labouring under fever, and yet not take the disease. Besides, if the apartment where this experiment was performed was well ventilated, the children might have sat with perfect safety within two feet of the little patient, as any effluvium would be carried away before it had become sufficiently concentrated to act deleteriously.

Dr Alison, however, states, that he has known many cases where persons have been attacked, from entering the sick-room of a small-pox patient. But, he tries to get over the difficulty by stating that " it is not necessary for our purpose that all should escape, but that any should not suffer. It is enough that those who escape are more, in proportion, than those who resist the action of the palpable poison when inserted into the system by inoculation." It is an axiom universally admitted, that one positive fact is worth a hundred negative ones. So that the positive fact of even one person having been seized with small-pox, after breathing the small-pox effluvium, is worth a hundred negative facts as to those who escape, seeing we know not the particular circumstances which hindered these others from taking the disease.

The author alleges that the existence of a specific contagious effluvium could never explain " the widely spread prevalence of disease at the same time among the inhabitants of a country or district." No one ever could suppose it would. Does Dr Alison here not confound epidemic and contagious influences,—two things perfectly distinct, and which ought never to be confounded?

Perhaps there is no contagious disease which may not originate from a peculiar concatenation of epidemic influences, but which, when once developed, continues to spread by contagion long after its original cause has ceased to exist. Such is the opinion held by Dr Hancock, who believed that " we shall never be able to extend our knowledge of the subject, till this opinion becomes general." This appears to be the most rational view of the subject, and the one most consistent with known facts. So far as regards plague, it seems established beyond doubt;* and there seems little reason to question its applicability to all other contagious diseases. Yeast is a substance which, in this respect, resembles contagious diseases. It may be produced in many various ways, but, once produced, it always propagates yeast, and yeast only. So is it with contagious diseases. Small-pox, plague, scarlet fever, &c. once originated from any cause or concatenation of causes, propagate small-pox, plague, or scarlet fever; but one of these is never found to produce the other, but each keeps itself distinct, and propagates itself alone.

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* Researches into the Laws and Phenomena of Pestilence. By Thomas Hancock. London, 1821. See also, History of Epidemic and Pestilential Diseases, By Noah Webster. London, 1800. 2 vols. 8vo.

The author in the progress of his work modifies the assertions made in his first pages; and, as if half convinced that diseases may be propagated by means of effluvia diffused through the atmosphere, he devotes a chapter to the means to be employed for the prevention and correction of vitiated air, particularly of the effluvia generated in the sick-room. His remarks on the advantages of free ventilation, removal of all impurities, and fumigations, are judicious; and it would be desirable that more attention was paid to this subject in the confined dwellings of the poor. He has, however, omitted to mention not the least important circumstance connected with this subject, that is, white-washing the walls of the apartment.

Dr Alison's last chapter contains some popular details on the advantages of an active and cheerful state of mind, sufficient clothing, and wholesome diet in the prevention and cure of disease. These remarks, though not new, show an active and benevolent mind, and prove Dr Alison to be warmly interested in that useful department of the Hygiene,—the prevention of the misery connected with epidemic and contagious diseases.

Art. V.—*Principles of General and Comparative Physiology, intended as an Introduction to the Study of Human Physiology, and as a Guide to the philosophical pursuit of Natural History.* By William B. Carpenter, Member of the Royal College of Surgeons, London, &c. London, 1839. 8vo. Pp. 478, six Plates.

Living bodies are distinguished from those which are inanimate, and have never presented the phenomena of life, by a peculiar species of structure; by consisting of various parts which, though analogous, are heterogeneous; by their parts possessing certain properties, and contributing to certain actions and functions; and by these properties, actions, and functions being regulated by laws of a peculiar character. The study of the phenomena evincing the existence of these properties, actions, and functions, and the investigation of the laws by which they are regulated, constitute a peculiar department of science to which the name of Physiology is applied. Physiology, according to this view, is a science of very great extent, since it combines the examination of the structures, properties, and functions of the whole organized world, both vegetable and animal.

Living bodies consist of two great divisions, those of the animal, and those of the vegetable world. Both of these divisions, however they differ in several of their minute component departments, make, nevertheless, a near approach to each other in many common features. While they differ from the objects of the dead or inorganic kingdom, they agree with each other in many circumstances of structure, of properties, and of functions. The study of the phenomena of this general class of bodies, the knowledge of the functions by which these are performed, and the investigation of the laws by which the existence of these properties, and the performance of these functions is regulated, constitutes a branch of physiology of a general nature, which directs the attention of the inquirer to the general characters of living action, as distinguished from physical actions, and is, therefore, both a more exalted and more difficult department of physiological science, and is one more suited to the philosopher than the detailed physiological views, either of exclusive vegetable, or exclusive animal bodies.

On human physiology there are many treatises; on the general physiology of animals there are several; and on the physiology of the vegetable world there are a few. But on the general doctrines of the phenomena and laws of animal and vegetable life in common, there is scarcely a single treatise to which the physiological reader can look with confidence, except the first volume of Tiedemann's System, and several of the preliminary chapters of Treviranus's System, and his work on the Phenomena and Laws of Organic Life. The present may be regarded as an attempt intended to answer the object now specified.

A book that fulfils in moderate compass the promise held out in the title of Mr Carpenter's work, would, there can be little doubt, be of great service to those who, with limited time and means, enter upon the study of Physiology or Natural History. The information scattered through numberless memoirs, and in the language of different countries, when added to the ponderous treatises of successive ages, upon any branch of science, forms a barrier to the progress of knowledge which can only be successfully overcome by those who have wealth and leisure at command. It is therefore a useful and important duty to place in lucid order the scattered information gleaned from the researches of a thousand minds, and to show how their facts, their experiments, and their observations, bear upon the subject of their general inquiry. This analysis, concentration, and arrangement of the new facts daily established by labourers in the field of science, is now doubly necessary, from the wide-spread spirit of scientific inquiry, which is a characteristic feature of the present times. We are therefore disposed to look with favour upon every attempt to condense the existing information in any one branch of science; and in no department is this more requisite than in that of general physiology.

Mr Carpenter's volume is divided into three parts. The first of these, introductory to the others, is "on Organized Structures." This portion of the work treats of, 1. Organized structures in general; 2. The elementary structure of Vegetables; 3. The elementary structure of animals; 4. Of the transformation of tissues; 5. A general view of the Vegetable Kingdom; 6. A general view of the Animal Kingdom.—Then follow, in two books, I. The Principles of General Physiology; and II. The Principles of Special and Comparative Physiology.

In his account of the structure of the animal kingdom, arranged under the heads Vertebrata, Annulosa, Mollusca, and Radiata, Mr Carpenter notices the leading points of resemblance which they bear to corresponding groups in the vegetable kingdom. Thus, he conceives the Exogenous plants to correspond to the Vertebrata—the Endogenous plants to the Articulata—the Ferns to the Mollusca, and the Fungi to the Radiata; and from a comparative view of their structure and formations, he traces an analogy between the two great divisions of living bodies.

On subjects of such vast extent, and upon which so much has been written, it would be foreign to the object of this Journal to dilate at any length. And it would be equally out of place to attempt a condensed view of a work, professing to be itself an epitome of all that is known upon the subjects of which it treats. We shall, therefore, in the remarks which follow, confine ourselves to such general observations as the limits assigned to a notice like the present will admit.

After some preliminary remarks, Mr Carpenter treats in his second section "of Organized Structures in general;" and the object of this section is, he says, to "show the relations between Life or Vital Action and Organized Structures." These relations are stated in terms so new to us, and appear to lead to conclusions so dangerous, that, notwithstanding the modifications of expression in other parts of the book, or the confusion of ideas that may have suggested the use of such terms, we cannot pass them over without observation. In the analysis of the contents this passage occurs:—" All physical phenomena result from the excitement of the *physical properties* of matter by external agents; and when these are not in operation no change takes place. In like manner, vital actions result from the excitement of the *vital properties* of certain forms of matter by external agents or *stimuli*; and are not manifested or called into play without the influence of these." (P. ix.)—In another passage these external agents or vital stimuli are said to be heat, light, and electricity.

The same opinions are expressed in the following passages, which are given in the words of the author.

"In the production of the changes which constitute the life of every animated being, we find an agent employed which is peculiar to the bodies that exhibit such changes, and which is entirely different from any thing we observe in the surrounding universe. This agent is the mechanism which is termed *organized structure*."—P. 7.

"It is scarcely a sufficient argument for the existence of a set of vital affinities, distinct from those which hold inorganic substances in combination, to say that all organized tissues exhibit a tendency to spontaneous decomposition by the separation of their elements, or by their dissipation under simpler forms, immediately upon the loss of their vitality."—P. 17.

"To refer all the operations of life which cannot be explained by physical laws to a 'vital principle,' is in reality to proceed just as philosophically as the ancients did in the cases just quoted, (the motions of the heavenly bodies;) since a strict examination into their character will show that, though not *identical with* physical phenomena, they are *analogous* to them; being the results of the operation of the vital properties which are peculiar to organized matter, just as the physical changes of inorganic matter result from the operation of its mere physical properties."—P. 130.

"The terms *vital principle* and *life*, are erroneously employed, almost synonymously, to imply the controlling agent by which the phenomena of living beings are directed, if not immediately produced."—"The doctrine of a vital principle is not only quite unnecessary to explain facts, but is totally unsupported by the analogies of nature, and by what we know of the Divine government in general."—P. 131.

"They (the functions) are called into action by *stimuli* of various kinds, adapted to excite each of them to its own peculiar operations. Now, although the adaptation of the various functions to one another, and the manifest tendency of all the vital processes to a common end, would appear, at first sight, to favour the idea of a presiding power by which the whole is regulated, a little consideration will show that these *really* imply no more than an original adaptation of the structure and properties of the organs by which they are performed."—P. 134.

"It is a question which has been vehemently discussed, but which is after all more one of words than of realities, whether vital properties are the *result* of organization, or that peculiar combination and arrangement in which the elementary particles of living beings are disposed,—or whether they are to be regarded as *superadded* to them."—P. 136.

"It has been one object of the foregoing pages to show that *vital* properties are as essentially connected with certain forms of matter, as are those usually denominated *physical* with matter under its more common aspects."—P. 463.

In these passages what are we to understand by the "vital properties of certain forms of matter," called into action by external stimuli?—or the agent of life described as "the mechanism which is termed organized structure?" Is life, either animal or vegetable, "the result of the operation of the vital properties which are peculiar to organized matter?" Is the very supposition of a vital principle unnecessary to explain the functions exercised by living beings? And is it possible that the voluntary exercise of these functions, with reference to a common end, "really imply no more than an original adaptation of the structure and properties of the organs by which they are performed?"

An answer to these questions would involve us in discussions unsuited to this Journal. It appears, however, from the extracts we have given, that Mr Carpenter wishes to impress the idea that combinations of matter may originate a living structure; and that life and vital action are the result of such combinations. If this be his true meaning, as it is the apparent one in the passages quoted above, it would require more than mere assertion to establish a proposition which has been repeatedly refuted. An organized body capable of being acted upon by a living principle, can in no case be said to be itself that principle; and though the connection between mind and matter,—between life and vitality, and the material body acted upon by this untangible, inexplicable agent,—may escape the scalpel of the anatomist, or the crucible of the chemist, yet is its existence not less palpable to our senses in every form of life around us. Without this vital principle to act upon organs suited to the nature of the individual, and of which it is perhaps the modifying agent, the tissues and organs of bodies would be inert substances. Has any chemist by a combination of the substances known to enter into the composition of the bodies of animals, been able to form muscular fibre, nerves, or bone? What concatenation of atoms has been observed to roll themselves into even the lowest or smallest of animal forms? The nerves cease to act, and the body to feel, when the living principle is suddenly extinguished, notwithstanding that all the apparatus for nutrition, circulation, and sensation, may be entire and uninjured. Let the vital spark—the breath of life—cease to act upon the most perfect assemblage of material organs, and these organs, the textures which compose these forms, are instantly subjected to chemical decomposition; form and texture are alike destroyed; and the matter which constituted them resolved into a few simple elements.

Life, or the vital principle, which when allied to matter controls its affinities and directs its forms, is, in fact, only known to us from its effects; in these alone is it recognized. These effects seem to consist in the faculty with which certain combinations of matter, when combined with vitality, are endowed, of existing for a certain period under a determinate form, and assimilating to their substance a part of the surrounding bodies; at the same time restoring to the elements part of their own substance. Baron Cuvier compares the mechanical action of life on matter to a vortex more or less rapid, more or less complicated, where the supply and waste of particles occasion a constant motion, and where the form is more essential than the matter. While this motion subsists the body lives; when it is stopt beyond recal the body dies. After death, the elements which composed it, left to the ordinary laws of chemistry, soon separate to form other and new combinations. It is by the vital movement or energy alone (according to Cuvier) that organized matter is held together in living forms. And these structures upon which the living principle acts, are so constructed and arranged by the Great Creator, as to be the medium of communication between the living agent which wills and feels, with the external and material world. The adaptation of these forms and structures to the nature and wants of the various tribes of living beings, affords ample space for research, without encumbering the mind with the investigation of unseen relations, which it is perhaps beyond the reach of the human faculties ever to unfold.

" Wherever we direct our inquiries (says Dugald Stewart*) whether to the anatomy and physiology of animals, to the growth of vegetables, to the chemical attractions and repulsions, or to the motions of the heavenly bodies, we perpetually perceive the effects of powers which cannot belong to mere matter. To a certain extent we are able to proceed; but in every research we meet with an impassable line—a line which is marked with sufficient distinctness, and which no man now thinks of passing who has just views of the nature and object of philosophy. It was indeed by pointing it out that Bacon did so much service to science."

Though we have considered it to be our duty to point out the tendency of such doctrines as are inculcated in the passages which have been quoted, yet it is but fair to the author to notice, that, in other passages of his book, he seems to allow that the vital principle which is found in connection with organized bodies is not a quality of the matter of which these bodies are composed. " Every organized body," says he, " is produced by a previously existing organism, no living being ever taking its origin from spontaneous combinations of existing matter." (P. 134.) And again, " organization and vital properties are simultaneously communicated to the germ by the structures of its parent." (P. 138.) And further, " physical properties themselves are dependent both for their existence and for their excitement to action, upon those vital processes which no mechanical contrivances, or chemical operations can produce or imitate." (P. 144.) And in one place he allows the whole of creation to be under the " continued superintendence of the Creator;" while in another passage, and in his concluding paragraph, he would seem to embrace the opinion, that all the visible creation was at first made so perfect that the machine of nature runs its allotted course, without requiring such continued superintendence.

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* The Philosophy of the Active and Moral Powers of Man. By Dugald Stewart, Vol. i. p. 212.

Had these last been the only terms in which Mr Carpenter had enunciated his ideas regarding matter, we should have been spared the necessity of pointing out statements which we consider to be highly exceptionable, and totally destitute of foundation, from any facts known with regard to the qualities of mere matter. Scattered as are the first quoted statements over his volume, we are not sure that every reader will stumble upon the other passages, fewer in number, which seem to negative the passages first quoted, if it was really Mr Carpenter's wish that they should have this effect. Destined as this book is for young inquirers, any expressions tending to lead the mind to the doctrines of materialism ought to have been sedulously avoided. The passages we have noted as to this effect, are, we hope, not the real sentiments of the author, but merely unguarded expressions; for we hold that no investigator of Nature in any of her aspects can, for a moment, entertain such opinions. In a future edition we trust that these passages will be so modified or altered as to afford no ground for observation or challenge. We are far from wishing to limit the bounds of physical investigation; but there are questions, and the connection of mind and matter is one of them, which are never likely to be solved, and the pursuit of which is as aimless as unavailing. Life or vitality we do not and cannot know, but in its manifestations through organic bodies. Its effects we see daily in numerous forms of being, but the principle itself is otherwise concealed from our view.

Regarding the doctrine of the machinery of the material universe being at first so perfectly formed and arranged by its great Author under certain laws, as not to require continued superintendence, we do not mean to quarrel. Many eminent men have entertained the same idea; and even this opinion has been attributed to Aristotle. But the more common and more correct belief is, that not only was the universe at first created by Almighty Power, but that it is under the continued and immediate superintendence of its Divine Author. And this doctrine is supported by the highest authority—that of Revelation; for St Paul, quoting as is said from an ancient Greek poet, asserts, that " in Him we live, and move, and have our being:"

> " All are but parts of one stupendous whole,
> Whose body Nature is, and God the soul."

We pass over the introductory portions of Mr Carpenter's work, of which we have already given the contents, with the remark, that he seems to have exercised considerable industry in the selection of his materials. In addition to the list of books, which he has consulted for the purpose of his work, it would have been very desirable, and extremely useful to the student, to have had references at the foot of the pages to the specific books or portions of books referred to, as supporting or controverting the author's statements. This would not have added much either to the size or expense of the work; and room might have been advantageously made for these, by the omission of some details in the introductory part, not so essential.

For Mr Carpenter's epitome of General Physiology we must refer to the work itself. It consists of four chapters,—1. On the nature and causes of vital actions. 2. Of vital stimuli. 3. General laws of organic developement. 4. General view of the functions.

The first chapter (Chap. v.) of the division entitled "Special and Comparative Physiology," is devoted to the consideration of the "Ingestion and Absorption of the Aliment." The various organs or apparatus by which alimentary matters are conveyed to the organized structures, both in the animal and vegetable kingdoms, are minutely described, and the analogy between the nutritive organs of these two departments of organized bodies is pointed out. All animals possess an internal organ for the reception of their food, and Mr Carpenter endeavours to establish an analogy between them and a few vegetables which he conceives to possess an organ something analogous to the structure of the animal stomach. The plants alluded to are the *Nepenthes*, *Dischidia*, and *Sarcenia*, which possess a kind of pitchers or bags for the reception of a fluid, which appears to contribute somewhat to the nourishment of the plants. The *Sarcenia* and *Dionæa* are in particular mentioned, as the flies which are entrapped in the pitchers of the former, or the leaves of the latter, seem in his opinion to furnish an aliment favourable to their growth. The lower classes of animals, as the Porifera, are also instanced as a connecting link between the animal and vegetable kingdoms, their porous surface being "apparently equally endowed with the power of appropriating to itself the nutritious materials contained in the water." Mr Carpenter is of opinion that there is a distinct chain of connection between all the various tribes of organized bodies, commencing at the lowest in the scale of the vegetable creation, and proceeding in an uninterrupted series up to man.

The "Circulation of a Nutritive Fluid," (Chap. vi.) is next noticed, as a process essential to the life of organized structures. The various means by which this process is effected, both in the vegetable and animal kingdoms, is minutely described. No vessels, it is observed, capable of carrying a circulating fluid, exist in those plants whose structure appears to be completely cellular; but in the *Lichenes* the cells present an elongated appearance, and possess the power of transmitting liquid to all parts of the plant. In the *Fungi*, in addition to the transmission of fluid by the cells, it is probable that the intercellular spaces also perform the same function. In the Ferns a proper vascular structure is observed, which is most perfect in the Phanerogamous plants. The sap ascends by the woody fibres to the leaves, where it acquires new properties, and descends by the cellular tissue and the intercellular passages of the bark. The ascent of the sap is explained on the principle of Endosmose and Exosmose; and Mr Carpenter thinks this fact is confirmed from the circumstance of its being observed that all vegetables throw out by their roots a peculiar secretion.

The author also describes minutely the circulating system in the various tribes of animals, from the simple movement of the nutritious fluid through the reticulated vessels of the Infusoria, "apparently similar to the circulation of the elaborated sap in the intercellular passages of plants," to the perfect vascular system of the Mammalia. Considerable weight is laid on the "influence of the capillary circulation in the general distribution of the blood." It is remarked that in the lower animals, and in plants, the circulation is entirely carried on by means of capillary attraction, and that even in the most perfect animals it is probable the circulation is very much modified by the same principle. The uterus during pregnancy is noticed as an example of this, as at that period a much larger quantity of blood is sent to that organ without affecting in any degree the general action of the heart. Other examples to the same effect are given, and amongst these the developement of the chick *in ovo*, where a capillary circulation is established before the formation of a heart. A few of the malformations of the vascular system, resulting from a want of organic developement, are also noticed.

"Interstitial Absorption" (Chap. vii.) is attributed almost entirely to the action of the lymphatic system of vessels; whilst too little notice is taken of the influence of the viens in producing the same effect.

The subject of the next chapter (Chap. vii.) is the "Nutrition and Formation of Tissues." It is remarked, that "it would seem to be a general law of organization that no solid textures can assimilate or convert into living structures like their own, matter which has not been previously formed into combinations, differing essentially from those which exist in the inorganic world. Thus we find in the blood a variety of ingredients, most of them peculiar to animal bodies, which have been produced subsequently to the first reception of its materials into the digestive cavity, and which are prepared for the reparation and maintenance of the several tissues; and, in like manner, the elaborated sap of vegetables contains other principles peculiar to the vegetable structure, and adapted to its maintenance. These are called, therefore, *organizable products*."—P. 268.

In the nutrition of vegetables the most prominent feature is the ascent of the sap, and its conversion in the leaves into a nutritious fluid, consisting in the great majority of instances of a gummy nature, in others, however, of a saccharine quality. The deposits of fecula and saccharine matters in different parts of plants is considered to be a store for their future nourishment. The mode in which the organizable products are converted into living tissues is endeavoured to be explained from analogical considerations, founded on what has been observed with regard to the cellular extension or growth observed in the Characeæ; but the subject is still involved in too great obscurity to permit of our arriving at any determinate conclusions.

In animal structures, again, the food is subjected to the process of digestion before being fitted for the nutrition of the tissues. It is remarked, that albumen appears to be the characteristic ingredient of the nutritious fluid in animals, as gum is in that of vegetables. It is not yet ascertained in what part of the system the nutritive fluid first takes on the form of globules, and acquires its vital characters; but Mr Carpenter thinks it probable that this process occurs in the lacteals, as globules are seen in the lacteals of the intestinal tube and mesentery. The whole of the vital properties do not appear to be communicated at once to the chyle, as it is not observed to possess the power of coagulation till it has passed through the mesenteric glands, and even then the coagulum is but imperfect. The properties of the blood and its constituent parts are next particularized, and a short table is given of the size of the blood globules in different animals.

In mentioning the constituents of the tissues, one substance, viz. gelatine, is noticed as being remarkably abundant in them, whilst its presence has not been detected in the blood. Mr Carpenter endeavours to explain this on the supposition, that "the conversion of the albumen of the blood into the gelatine of the tissues, (or into whatever principle occupies the place of that which is known as gelatine in a separate form,) may not improbably be the source of the carbon set free during the circulation of the blood through the system." (P. 289.) It is quite probable that a very small proportion of the carbon which is thrown off from the system may result from such a process as that described; but it would never account for the enormous quantity of carbon which is daily thrown off by human bodies. It is usually estimated that man throws off by the lungs alone about eleven ounces of solid carbon every twenty-four hours. If the conversion of albumen into gelatine were the only source of the carbon, what would become of the immense quantity of gelatine which would be daily formed? Or what purposes could gelatine serve in the animal economy?

"Respiration" (Chap. ix.) is the next function which is noticed; but, with a strange want of consistency, he attributes the changes effected on the nutritious fluid in plants by the air to a vital process, whilst in animals, he avers that the aeration of their nutritious fluid is "a change dependent on physical laws." He instances as this physical law, the experiments of Professor Graham on the diffusion of gases; and compares the interchange which takes place between gases when separated from each other by a membrane, to the elimination of carbonic acid from the lungs, and the absorption of oxygen gas. There is, however, no analogy between these processes; for if there were, instead of the oxygen being alone diminished, both the oxygen and the nitrogen would disappear; a circumstance which does not occur. If such were the case, oxygen would be found in a free state in the arterial blood, and carbonic acid, in much larger quantity than it has ever yet been met with, would be found in the venous blood; both strong arguments against such a supposition. Besides, such an assumption would never account for the fact that the oxygen consumed is, as nearly as can be estimated, in the exact ratio of the carbonic acid thrown out. Mr Carpenter, however, adduces, in proof of his theory, the experiments of Edwards and Müller, of enclosing frogs in hydrogen and nitrogen gases, when it was found that a certain quantity of carbonic acid was exhaled from their bodies. The fact, too, of a limb or the body of an animal throwing off a quantity of carbonic acid, when confined in a limited quantity of air, is also adduced in favour of the presence of carbonic acid in the blood. These experiments may be quite correct, and yet not prove the point in question. For if, as Mr Carpenter himself affirms, the conversion of albumen into gelatine sets free a proportion of carbon, its union with any oxygen which may exist in the blood will at once account for the appearance of carbonic acid in the confined air in these experiments, without having recourse to the supposition that it exists in a free state in any material quantity in the blood.

The respiration of plants is described as being effected chiefly by means of the green surfaces of the leaves and stem. They are described as deriving their chief source of carbon from the surrounding air, but that they can only receive this supply under the influence of light. The Fungi are, however, admitted to draw their supply of carbon almost entirely through their roots. The author appears, however, to overrate the functions of the leaves, for if their chief supply of nutritive carbon was extracted from the air, what would be the use of the roots? or why do potted plants fade as soon as they exhaust the soil in which they are placed, however well they may be supplied with water and air? It appears to be fully ascertained that the sensible properties of plants are developed in proportion to their free exposure to the influence of light;

but it does not appear that their growth, or the addition of carbon to their substance, depends on their extracting that substance solely or even chiefly from the air. Blanching celery, rhubarb, or sea-kale, does not prevent their growth ; it only makes them more tender, and less harsh-flavoured than in their natural state ; and plants growing in confined cases, according to the plan of Mr Ward of London, continue to grow and flower, though they can receive no fresh supply of carbon but from the soil in which they grow or from their own exhalations. It is admitted on all hands, that it is only during sunshine that plants possess the power of decomposing carbonic acid, and, of course, it is only then they can have the power of extracting carbon from the air and uniting it to their system. But a fact is related by Mr Ellis, which goes far to overturn the theory, that their supply of carbon is chiefly derived from the atmosphere. For nearly twenty days in spring, the sun had not shone, and the vast forests of North America had meanwhile burst into nearly full leaf, but the leaves were of a pale or whitish colour. One forenoon, the sun broke forth in full brightness, and by the middle of the afternoon, the whole forest exhibited its usual summer dress. Here the growth had gone on as in the blanched pot-herbs, without the possibility of any part of it being attributable to the decomposition of the carbonic acid gas of the atmosphere. Some plants, however, appear to derive the greater portion of their nourishment from the atmosphere, but these are not, in general, furnished with the same active roots as those which draw their nutritive supplies chiefly from the soil.

Respiration in animals exerts a more immediate and more powerful influence over the system than in vegetables ; and it is remarked that there is a constant correspondence between the activity of this function and the vital energy of the animal. The organs which are concerned in carrying on this function in the various classes of the animal kingdom are minutely described ; the general purpose in all the varied contrivances being the exposure of the nutritive fluid to the agency of the atmospheric air.

The changes which air undergoes during the process of respiration are considered under four heads. " 1. The disappearance of oxygen, which is absorbed. 2. The presence of carbonic acid, which has been exhaled. 3. The absorption of nitrogen. 4. The exhalation of nitrogen." The first two heads have been already noticed. With regard to the absorption and exhalation of nitrogen, there appears to be no doubt ; and it would even seem that in most of the herbivorous animals the chief nitrogen of the system was derived from the atmosphere, as they live on food totally deprived of that principle ; so that there is no occasion for supposing, as Mr Carpenter has done, that " no animal could exist long, if fed on purely unazotized principles."

The Exhalation of Aqueous Vapour (Chap. x.) is next accounted for, and the different structures which exist in both the vegetable and animal kingdoms, and are concerned in this process, explained. It is remarked, that, "though partly the effect of simple evaporation, it is principally dependent on a true process of secretion, by which it is liberated from the circulating fluid." Vegetables whose nutritious juices contain a very large quantity of aqueous fluid are provided with stomata, which are most abundant on the lower surface of the leaves, and also on the stems of herbaceous plants. It is by these apertures or pores that the aqueous exhalation is poured out. It is asserted that the vapour thrown off by the lungs of animals is probably the result of mere evaporation, whilst that from the skin is the result of a true secretion, particular organs being provided for this purpose.

Chapter xi. is devoted to the consideration of the Secretions. It is remarked that "the process of secretion is truly one of separation," as "the peculiar products contained in the secretions exist in the circulating fluid;" and that, though it is difficult to explain why each gland should secrete a fluid peculiar to itself, the fact seems substantiated by the occurrence of deposits of uric acid, cholesterine, &c. in various parts of the body. Mr Carpenter infers that the animal body is continually renewing by a process of interstitial absorption and deposition; a conclusion which, though often stated, has never been clearly proved. The only experiments upon which this assertion rests are those of Hunter and Monro, who found that, by feeding animals with madder, the bones became tinged of a red colour, but that if the madder were discontinued for a few weeks before the animal was killed, the colouring matter was all removed, and the original colour of the bone restored. The conclusion from this fact is, that the bones possess absorbents, and that colouring matters introduced into the circulation are deposited with facility in the bony structures, and as easily removed. Is it reasonable to suppose that, in the short space of a few weeks, every particle of the bony textures of the body should be taken up, and anew deposited? If such were the case, why is it that carious particles of bone are the cause of months, nay, years of suffering? Why is it that scars on any part of the body remain indelibly imprinted during the whole of life? The only answer which can be given is, that no such continued interstitial absorption and deposition takes place, at least during health. The analogy of the vegetable kingdom would lead to the same conclusion. Particles once deposited in the solid structures of plants remain unaltered during the life of the individual. Names cut on trees have been discovered hundreds of years afterwards, enclosed in the centre of the woody fibres, as fresh as the day they were first cut there. Mr Carpenter, however, thinks that the analogy, which he endeavours to prove in every other instance between vegetables and animals, does not exist here, on the ground that in animals "all the soft tissues possess a strong tendency to decomposition." This tendency to decomposition is, however, as effectually prevented in the one case as in the other by the presence of the vital principle.

The varied secretions which are met with in the vegetable kingdom are next noticed, and it is remarked generally that they are the result of the combinations of the elements of water with carbon, to which nitrogen is in some cases added; a few, however, are composed of hydrogen and carbon alone. The milkiness of the juices of many plants is attributed to their holding in solution or suspension various products besides those which contribute to the nutrition of the system. These juices are found in the leaves and bark alone. It is remarked with regard to the fixed oils, that like fecula they occupy the interior of common cells, and are probably transformed by germination into a material fit for the nutrition of the young plant. The excretion of gum, sugar, oils, &c. are regarded as being merely owing to an excess of these substances in the plant, or from their being found near the surface. The matter excreted from the root is described as being probably a noxious product, whose presence is deleterious to the plant. The various secretions in the animal body, and the secreting organs in the different classes of animals, are described with equal minuteness; but it appears unnecessary to notice them in detail.

The next chapter (xii.) contains a few short remarks on the Evolution of Light, Heat, and Electricity Phosphorescence is observed in many bodies both animal and vegetable when in a state of incipient decay; but it is also noticed in several Fungi during a state of active growth. That in the animal kingdom has attracted the greatest notice, a great number of the lower aquatic animals being possessed of phosphorescent properties. It is remarked, that in the Medusæ this phosphorescent property appears to reside in the mucus which is secreted around their tentacula; and it is not a little singular, that the mucous secretion of fuci, and also that of fishes, possesses the same property. Several insects present this phosphorescence.

The evolution of heat by vegetables, particularly during inflorescence, is noticed; but vegetables appear to be more dependent than animals on the temperature of the medium in which they live. A few facts are mentioned with regard to the evolution of heat by the invertebrated animals, which seem to prove that they possess the power, though to a limited extent, of generating heat. This power is most perfect in Birds and Mammalia, who can maintain a temperature quite independent of that of the surrounding medium. Mr Carpenter endeavours to explain the mode by which this increased temperature is maintained, by supposing that the oxygen, which he asserts is absorbed by the arterial blood from the atmosphere, is united to carbon in the capillaries, and that this union evolves heat. It is far more probable, however, from all we know of the process, that this union takes place at the lungs, by an immediate union of the oxygen with the carbon in the venous blood. If the process of union and consequent evolution of heat took place in the capillaries, the extremities ought to be warmer than the interior of the body; and exposure to cold would invariably cool the lungs before it acted on the extremities. Neither of these are known to occur, but, on the contrary, we are invariably told that the internal parts are several degrees higher in temperature than the surface of the body. These facts are well explained in a little work by Mr Grisenthwaite on food, where he proves that the blood in the lungs receives during ordinary respiration an increment in temperature of three-quarters of a degree, a quantity amply sufficient to maintain the wants of the system.

A few facts are stated with regard to the occurrence of electricity in plants and animals.

The next chapter (xiii.) contains many curious facts with regard to the Reproduction of Organized Beings, and the striking analogies which exist in this respect between plants and animals. Thus many of the lower animals, as polypi, annulose animals, &c. may be propagated by cutting them into pieces, each portion becoming a new and perfect animal. The usual mode of the reproduction of polypi is by gemmules or buds from the sides of the parent animal, which at length drop off perfect animals. In this respect they present a strong analogy with plants. Our space will not, however, admit of further details on this subject.

The Subordinate laws regulating the exercise of the Reproductive Function,—Distinction of Species, and Propagation of spontaneous or acquired Peculiarities, are treated of in the fourteenth chapter. Many interesting facts are recorded on all these heads, but they all tend to show how much is yet to be learned with regard to them. Many species of plants and also of animals, formerly thought to be distinct, are now found out to be derived from the same original source, and the modifying causes which have led to the appearances of distinct varieties are not yet known.

The fifteenth chapter treats of the "Sensible Motion of Living Beings." Sensible motions are noticed in several plants as well as in the animal creation; but it has never been proved that this motion in plants is the result of a nervous agency. The folding of the flowers and drooping of the leaves of plants have been usually attributed to a diminution of the activity of the vital processes, by which the turgescence of the softer parts of the structure is diminished, this appearing to depend much on the withdrawal of the stimulus of light and heat. In some cases, however, it appears to be in part of a periodic character. The spontaneous movement of the seed-vessel in many plants has been explained on the principle of endosmose. The outer cells being the largest, and possessing a denser fluid, that from the inner smaller cells passes to them, and by their distension causes the shutting of the valves of the seed-vessel, and the scattering of the seed. A special tissue, the muscular, is provided for the motive powers of animals.

The "Functions of the Nervous System" are treated of in the sixteenth chapter, and as vegetables possess no analogous structure, the whole chapter is devoted to the consideration of the principal forms which the nervous system presents in the animal kingdom, and the functions to which it ministers. The developement of this system is traced through the various classes of animals, from the simple nervous filaments of the Acrita, to its most perfect structure in the Mammalia. The division into motor and sensitive nerves is explained, as well as the functions which each of these performs in the animal economy.

The volume concludes with a short chapter on the "Evidences of Design presented by the structure of organized beings."

We regret that we cannot conscientiously recommend this book. Tainted, as it seems to be, with opinions detrimental to the best interests of mankind, we cannot hold it up in its present state as a safe guide, even in the study of those sciences, the principles of which it professes to place before the reader. The concluding chapter is but a feeble antidote to the previous statements.

ART. VI.—*Illustrations of the Comparative Anatomy of the Nervous System.* By JOSEPH SWAN. Part I. 1835, Part II. 1836, Part III. 1837, Parts IV. and V. 1839. London. 4to.

MR SWAN has already greatly distinguished himself by his meritorious and useful labours in rendering the study of the anatomy of the nervous system in the human body more easy and more generally known. By his large work on the Anatomy of the Nervous System of the Human Body, he has enabled the student to acquire a minute knowledge of the neurography in a much shorter time than he could previously have done. The various writings also of Mr Swan, and especially his Essay on the Nervous System, noticed in the seventeenth Volume of this Journal, show the great interest which he takes in the advancement and rectification of our knowledge of neurology, and the disorders proper to the nervous system.

The plan of the present publication from this indefatigable cultivator of anatomy is more comprehensive than any of his previous performances, in so far as he here proposes to give a view of the neurography of the several families of the animal kingdom. This is a service of great importance both in anatomy and in physiology. As the functions of the nervous system are remarkably obscure and difficult to be understood, so there is no method which is more likely to explain anomalies, to reconcile discrepancies, and to elucidate obscurities, than attentive consideration of the various forms which the nervous system presents in the different classes of the animal kingdom.

Various modes of studying the anatomical peculiarities of the nervous system have been adopted by different authors. It has been a very usual method to begin with the animals commonly denominated the lowest in the series of animal life, or those of most simple organization, and from these to ascend to those of more complex structure, until we reach those classes believed to be placed at the top, as it is termed, of the scale. This is the mode adopted by Mr Swan. He begins first to give views and descriptions of the nervous system as it is presented in the Crustaceous animals, several of the Molluscous animals, and some of the Annulose. He next gives views and descriptions of the nervous system in several of the class of Fishes, as the cod *(Gadus Morrhua)*, and the skate *(Raia Batis.)* Next follows the class of Reptiles of the nervous system, in which examples are taken from the turtle *(Testudo Midas,)* and the *Boa Constrictor*. Then comes the class of birds among which the nervous system is delineated, as it appears in the pelican, the goose, and the swan. And, lastly, among the Mammalia the position and distribution of the most important parts of the nervous system are represented in the ox, the ass, and several varieties of the monkey and baboon tribe. The latter conclude the fifth number; and no more of the work is yet published.

Though we are ever averse to take notice of a work not completed, both from a sense of justice to the author, and to ourselves, we are disposed to deviate from this custom in the present instance for two reasons. *First*, We think that the anatomical and physiological portion of the world should know and estimate the value of the labours of Mr Swan; and *secondly*, We are desirous to encourage the author in his undertaking, so far as it may seem to deserve encouragement.

We have to say, then, that the present work, judging from the specimen already before the world, promises to be a treatise of great value to anatomical and physiological readers. It cannot be expected on a subject so extensive and so diversified, that the author should give representations of the nervous system in all the tribes and families of the animal world. Nor indeed is this requisite; for in the same class, the nervous system is formed so much upon the same standard, that a view of its position, parts, and distribution in one or two individuals of each class, is all that is requisite to communicate ideas of its distinctive characters or causes. Upon this principle Mr Swan proceeds; and after descriptive explanations of the anatomical peculiarities, he gives general views of the anatomy and physiology of the nervous system in each class compared with the other. In these views and explanations, there is perhaps not a great deal of novelty; but the anatomical facts and their physiological applications are impressed with great force and clearness. The latter are always instructive and often interesting.

Our limits do not permit us to enter into any detailed account of the descriptions and observations of Mr Swan; and we must say at once that, in order to be perfectly understood, and furnish its full benefit, the work must be carefully perused and studied, with dissections of various animals at the same time. But it may contribute to this end, and also be otherwise useful if we shortly direct attention to some of the points illustrated by the researches of Mr Swan.

In the Vertebrated animals, the central part of the nervous system consists of a large expanded mass, composed, in general, of several symmetrical parts and a longitudinal prolongation, both inclosed in bony cases, and often designated as the Cerebro-Spinal Axis. In the Invertebrated or Aspondylous classes, it is doubtful whether there be such a part as a central portion of the nervous system, or a cerebro-spinal axis, and in some no nervous system of any kind has yet been discovered; but, in general, when it does exist, the brain or expanded portion of the vertebrated classes is represented by one ganglion situated above or on the dorsal portion of the œsophagus, while from it on each side of this canal passes a nerve, longer or shorter, to a ganglion situate below or on the ventral aspect of the œsophagus. In this manner is produced a nervous collar or ring, encircling the œsophagus, and it is in some instances so partitioned as to form a double ring. From the brain and this ventral ganglion, or from the nervous ring the principal nerves are at once sent off, or, to speak more accurately, this collar is connected with the principal nerves; or, there is a chord or prolongation, composed of two portions, more or less separated, and extending from the first ganglion to the second, and thence to the others. This may be regarded as the representative of the spinal chord in the vertebrated classes.

Between the structure and position of the parts now mentioned and the brain and spinal chord of Man, and the whole Mammalia, the resemblance is faint and the analogy incomplete. Though the nervous chord be sometimes rather different in its two surfaces, inasmuch as a ganglion is extended into the ventral surface, and a layer of longitudinal fibres passes over the dorsal, yet this distinction is not general. Its resemblance to the spinal chord, especially in respect of its connection with the nerves, is distant; for some fibres do not proceed from the ventral surface, and others from the dorsal to be united to form one nerve, but are conveyed separately and without intermixture, to parts similar in appearance and structure.

The only comparison which Mr Swan thinks the anatomical facts warrant between the appearance of the nerves encircling the œsophagus of the Invertebrata, and the brain and spinal chord of the Mammalia, is with the pneumo-gastric nerve of those animals in which the sympathetic nerve becomes so combined with the ganglia of the dorsal nerves as not to admit of separation. The compound ganglia terminate after the usual manner of the dorsal nerves in the muscles and skin, except that some communicate with branches belonging to the viscera. If, therefore, he argues, the spinal chord were removed, and the ganglia, with their prolongations on each side were drawn together, through the connection of the pneumo-gastric trunk with the brain, a nervous chord, similar to that of many Aspondylous animals, would be produced.

In short, if we consider the nature of the organs with which these nerves are in the Aspondylous animals connected, we shall see reason to infer, that the form of nervous system presented by the majority of the Invertebrata represents neither the spinal chord nor the pneumo-gastric nerve, nor the great sympathetic exactly, but resembles certain parts of the two latter organs. We are not prepared to admit that the termination of these compound ganglia on the skin presents a just analogy with the spinal nerves of the vertebrated classes. The explanation of this mode of distribution appears to us rather to be sought for in the mode in which respiration is performed in the Aspondylous classes. In other words, as respiration is performed in these animals by *tracheæ* or *spiracula* opening on the skin, it seems most reasonable to think that the nervous filaments sent to this surface are representatives of the pulmonic division of the pneumo-gastric nerves in the Vertebrated classes. This seems to be most probable as to the leech, the earthworm, and similar animals of the Annulose order.

These facts, and the deductions which they furnish, are rather at variance with those doctrines, the object of which is to impress the principle of unity of organization, or that the bodies of all animals, and the component system of animals, are formed on the same type or model. And, accordingly, the author discusses this question more in detail in his observations on the state and forms of the nervous system in the finny tribes.

The following observations on the subject of unity of organization are very just, and deserve particular attention. They show that the search after this principle may be carried to an undue and extravagant length; and that, however interesting it be to trace those general and common analogies in which the different tribes of animals and all the different organs appear to have been constructed, yet there is a risk of modifying and warping facts, and thereby doing injury to the cause of true science.

" The progressive changes in the human fœtus during uterine existence, and their comparison with the perfect state of various creatures, have occupied considerable attention. Such opinions may, however, have been founded on these inquiries, as are indeed novel, and to some extent probable, but in reality not so plain as their pretensions, on a superficial examination, seem calculated to determine. It is stated that the human brain and spinal marrow, in their early stages, pass through the permanent forms of those of fishes. The varying size and shape of the anterior lobes are compared with the anterior prominences of the brain of the human fœtus, the optic lobes with the next, and the cerebellum with the most posterior. This is the comparison of a creature in every respect perfect, with the very diminutive and immature parts of a fœtus; it is a comparison of the well-defined external and internal shapes and perfect organization of the mature brain and spinal marrow of fishes, with the diffluent matter contained in the membranes within the cranium and spinal canal; and although in time an immersion in alcohol gives this some consistence, the reality, as it exists in the living fœtus, is not altered. If the several parts of the brain of fishes be examined separately, it will be found that the varying form of the anterior lobes, which are commensurate with the olfactory nerves and the nose, does not countenance any just comparison with the anterior prominences of the brain of the human fœtus. The optic lobes are compared with the prominences representing the quadrigeminal bodies. These are termed optic lobes, because they are supposed to give origin to the optic nerves. In the cod, the optic nerves arise from the mammillary bodies as well as from the optic lobes; and the mammillary bodies are large in proportion to the size of the optic nerves, and not to that of the brain. In the turtle, the optic tracts are the continuation of the thalami, although they communicate with the optic lobes. In the goose, the optic tracts are extended from the optic lobes, and have an acquisition from the thalami. In man, and most of the mammalia, the optic tracts are evidently continued from the thalami, and their functional relation may be assumed from morbid anatomy; for in continued blindness of one eye, the optic nerve has been found much smaller than that of the sound organ; the optic tract, as it passed on the opposite side, has been withered in the same manner; and the thalamus, from which this proceeded, has been flattened, and not so full and plump as that from which the sound nerve originated. The inference to be drawn from such facts is this—that other parts of the brain besides the optic lobes are necessary for vision in the four superior classes of animals; and if similar ones exist, they are very differently placed. These considerations, apart from the imperfection of structure, tend very much to invalidate the pretensions to a comparison between the brain of fishes and that of the human fœtus, at least as far as they depend upon external appearances.

"Doctrines founded on the location and external resemblances of parts, without a sufficient regard to their internal structure, are to be received with proper limitations, otherwise they must be extremely fallacious; but notwithstanding the necessity of this precaution in the present instance, it must be allowed that much curious and interesting information has been elicited respecting the gradual development of the nervous system in the fœtal progress of many animals. Some slight approximation of external appearance between individuals of separate classes, in different stages of growth, may be contended for, but not enough for establishing any further identity with each other. The comparison of the vesicular form of the fœtal brain of one creature with that of another in a similar state, may be properly admitted, although one have existed only a few days, and the other several weeks, but it never can be when it is made with the completely organised brain of a perfect being.

"If ingenuity could have satisfactorily reconciled the incongruity in the comparison of perfect with imperfect structures and other differences, it might have established the existence of a series of most curious coincidences; but it could not have countervailed the fact, that each creature was separately created, and had a law implanted on it, by which the generative organs should determine the reproduction of its like, and the quickened germ preserve a particular order of development of its various parts, in the progress of the fœtus to maturity.

"The pretensions to uniformity in some particular stage, during the fœtal progress of different classes of animals, having been briefly noticed, it may be necessary to inquire into those relating to a similarity of arrangement in the perfect state of the nervous system.

"Although the animal kingdom has been formed from a few primary substances, yet each species has a peculiar construction, not only in mechanical arrangement, but in the varied combination of elementary particles; so that the several parts are not only different in external character, but in such particular properties as are appreciable by the taste and smell. There is in almost every species some variety in the organs composing it; there is an adaptation of the nervous system for exciting and harmonising the different organs, and a peculiarity of the brain for imparting a degree of intelligence necessary for directing each creature to a determinate end. If one part therefore varied, others must be modified to correspond with it.

"The more carefully the nervous system is examined, the more difficult it becomes to reduce to one standard the forms of any of its several parts in all animals. It is not surprising that it should when it is considered how different the stations and pursuits of different creatures are required to be, and, consequently, the arrangement and structure of the various organs of which their bodies are composed. It is, however, pleasing to see the similitude of so many portions of it displayed by comparative anatomy, even in only a part of the animal kingdom, the clearer and more ample development of the one confirming the more diminutive and dubious character of the other. It would have accorded with the wishes of man, with that longing after the attainment of perfect knowledge, to have been able to find a regular disposition of a principal portion of the nervous system of every animal, and in the rest a gradual rise towards the highest standard of perfection; but this position at different points fails to be realised, and must be deserted as untenable, if it is to be maintained by a strict adhesion (adherence) to truth."—Pp. 42–44.

The subsequent observations are also well deserving attention of those who search keenly for the proofs of this principle.

One circumstance to which we are surprised the author does not particularly advert, results very clearly from those illustrations of the nervous system, especially in the Invertebrated classes, and in the lower branches of the Vertebrated classes of animals. Anatomists and physiologists have fallen into the habit of representing the brain and spinal chord to give origin to the nerves, and the nerves to proceed from the brain and the spinal chord; and this mode of expression has exercised considerable influence over our views on the functions of the nervous system. This mode of viewing the nervous system, however, which seems to have originated in observations on Man, and the Mammalia, chiefly if not solely, is almost directly contradicted by the anatomical arrangements of the nervous system in the Invertebrata, and in the cold-blooded orders of the Vertebrated animals. In the latter the brain and spinal chord are small, compared with the bulk of the nervous system in general; and if we take the locomotive nerves, *i. e.* those going to the fins and other muscular organs in fishes, we find that they are disproportionately large, to the central parts of the nervous system. In the former it is actually a matter of doubt, whether there be a brain and spinal chord; and if the œsophageal ganglion and its chords be supposed to represent these parts, they are obviously too small to justify the inference, that they could give origin to nerves, which, taken together, are assuredly much larger and more voluminous than those supposed central and generating parts of the system. All the facts presented by the examination of the nervous system in these animals, in short, show that the nerves do not proceed from the brain and spinal chord, but are formed along with the organs in which they are lodged, and to which they are distributed; and that they are merely employed as the instruments of maintaining a communicati
of property and action between differen
by their connection with the central

These views are confirmed by the distribution and connections of the great sympathetic nerve.

In the account given by Mr Swan in the fifth number of the present work, he directs attention to the intimate connection subsisting between the branches and twigs of this nerve and the arteries, all of which are enclosed by numerous filaments of this nerve in all those tribes of animals in which it is visible and capable of demonstration. It seems to be chiefly, in short, along with the arterial canals that the filaments of this nerve enter and are distributed to the different textures and organs which it supplies. This shows, it may be inferred, that one of the principal uses of the great sympathetic, and indeed all the gangliar nerves, is to preside over the arterial and capillary circulation, to regulate the motion of the blood in the capillary vessels, and thereby to preside over the great functions of circulation, nutrition, and secretion.

On these points, however, we need not here dwell, and we must request our readers to peruse attentively the observations of Mr Swan.

The engravings are very beautifully executed, and present distinct representations of the objects. The work will doubtless be a valuable accession to the physiologist; and we hope the author will proceed with diligence and spirit in accomplishing his useful labours.

ART. VII.—*The Surgical Anatomy of the Groin, the Femoral and Popliteal Regions.* By THOMAS MORTON, formerly one of the House-Surgeons of University College Hospital. With Lithographic Plates and Wood-Engravings. London, 1839. Large 8vo. Pp. 207.

THIS small but useful publication is by the same individual whose work on the perinæum we had some time ago occasion to introduce to the notice of our anatomical and surgical readers, and, indeed, may be regarded as forming with that, a sort of treatise on surgical anatomy.

The author describes very carefully and accurately, and represents very clearly, the different textures and parts connected with the groin, the femoral and popliteal regions.

Under the first head is an account of the anatomy of the parts concerned in the production of hernia, especially femoral, with that of the femoral vessels. In the second part, on the surgical anatomy of the thigh, is given a view of the relative position of the large vessels and nerves of the thigh, especially the femoral artery, the operations performed on it, and also the external iliac and the operations of which it becomes the seat. The third part of the work is devoted to the elucidation of the surgical anatomy of the ham, including the popliteal artery, and the mode of exposing it and its relations, and an account of popliteal abscess, popliteal aneurism, and the diseases of the popliteal glands. In a concluding or fourth part, Mr Morton gives a view of the anatomy of the hip-joint, and the injuries and diseases to which it is liable.

We have only space to say, that the present forms a good system of surgical anatomy so far as it goes, and will be highly useful to the surgical student. We trust the author will in like manner illustrate the anatomical relations of the neck and its parts.

ART. VIII.—1. *Practical Surgery, with One Hundred and Twenty Engravings on Wood.* By ROBERT LISTON, Surgeon. London, 1837. 8vo. Pp. 494.

2. *Elements of Surgery.* By ROBERT LISTON, Surgeon to the North London Hospital, Professor of Clinical Surgery, &c. &c. Second Edition. Illustrated with Engravings and Wood-Cuts by Bagg. London, 1840. 8vo. Pp. 795.

THE first of these works, entitled Practical Surgery, might be supposed to be a treatise devoted exclusively to the operating, or rather the therapeutic department. It is certainly very much employed in explaining the principles of operations, and the author's method of performing them. At the same time, it presents short and in general correct sketches of the origin, progress, terminations, and pathological history of all those maladies, accidents, and injuries which require the aid of the surgeon.

Thus, after an introduction on the simplicity and efficiency of modern surgery, and one chapter on incisions, the use of the ligature, and the effect of escharotics, and another on union, the author gives a short view of the injuries and diseases incident to bones, the injuries and diseases incident to joints, and the injuries of muscles and tendons,—preparatory to the account of the operations respectively requisite for each. In the fifth chapter is given an interesting account of the injuries and diseases of blood-vessels, and of the operations required for their treatment. In the sixth chapter the author appears as a keen and zealous defender of the dignity and utility of that department of surgery, the object of which is to restore lost parts. The defence was unnecessary; but if Mr Liston chuses, all rhinoplastic, cheiloplastic, and otoplastic operators are much indebted to him. After all, these restorative operations are but sorry mendings of the original structure.

The subject of morbid growths and enlargements is very extensive, and is treated with proportionate detail and fulness. Amputations follow, and are explained with the usual clearness and precision of the author. Then follow the operations required for the treatment of injuries and diseases of the mucous canals, those for the treatment of the injuries and diseases of the genito-urinary organs, and those for treatment of the injuries and diseases of the serous cavities.

In that on the injuries and diseases of the genito-urinary organs are good accounts of the structure, the diseases of the bladder, and the operations of lithotomy and lithotrity. The operation of lithotomy, in which the author so much excels, is well described, and graphically represented in a good wood-cut. Mr Liston is rather severe on Mr Crichton's method of attempting to close by the first intention the wound made in lithotomy. When two lithotomists so eminent cannot agree, it is idle for us to attempt to reconcile the discordance. The only way to be followed is to recommend surgeons to try first the method of Mr Crichton, and if that be attended with bad effects, to have recourse to the tube of Mr Liston.

In the fourteenth chapter the different varieties of hernia are shortly described, and the operations adapted to each more fully explained. And in the fifteenth chapter, which is also the last, Mr Liston notices the different kinds of congenital deformities and deficiencies preparatory to the account of the means to be employed to rectify the one and supply the other.

The second work is a new edition of the Elements, an account of which at its first appearance was given in the thirty-fifth volume (p. 194) of this Journal. This comprehends not only the operative department, but the history and pathology of those diseases and injuries requiring surgical operations. Like the first edition, it consists of two divisions; the first on Inflammation and general Surgical Diseases, or those common to all the parts of the body; the second devoted to the history of the Diseases and Injuries of particular Regions, Tissues, and Organs of the body.

As a detailed account of the greater part of this work was given in our thirty-fifth and thirty-seventh volumes, it is unnecessary to do this again; and it is sufficient to say that the present edition promises to be useful to the surgical student. The descriptions of the symptoms and pathology of the different diseases are clear and impressive; the author always shows that he perfectly understands, and can clearly explain the characteristic features of disease; and his operative measures are always simple, neat, and efficient. In the latter department, indeed, he excels; and every one who wishes to distinguish himself as an operating surgeon will do well to study his directions attentively. In some instances, we think he overlooks details and minute niceties in operation, which, though perfectly familiar to himself, are not well known to, and are not easily acquired by others. The superiority of Mr Liston, however, appears in those operations which may be denominated irregular, that is those in the performance of which it is difficult, if not impossible, to lay down fixed rules. For these he has always resources, and his descriptive details in the present volume show that he has considered carefully every variety and anomalous emergency that is likely to present itself.

The observations on the treatment of wounds of the windpipe are very judicious.

Mr Liston seems to speak with unnecessary harshness of professed aurists, especially those who probe and inject the Eustachian tube; but with deserved severity of those who have cut away parts or the whole of the uterus. Indeed, the whole of this random, reckless, and aimless surgery ought to be abandoned as bringing discredit, and even infamy upon a useful art.

The articles on hernia, lithotomy, and amputation, contain many interesting practical remarks, and cannot fail to be perused with instruction.

This volume, like the other, is illustrated with many very beautiful and distinct wood-cuts; and one figure of a ricketty skeleton, one of angular curvature, and one of lateral curvature of the spine, are introduced.

ART. IX.—*A Practical Treatise on the Diseases of the Eye.* By WILLIAM MACKENZIE, M. D., &c. Third Edition. 1840. 8vo Pp. 923.

THIS treatise we, on a former occasion, mentioned as the most complete extant on the diseases of the eye, and the treatment and operations required for their relief or removal. The work has since that time deservedly acquired much popularity; and in the present edition, the author has studied to render it still more worthy of the favour with which it has been received. The work is not only enlarged by the addition of new matter, but is improved by the introduction of information wherever the progress of ophthalmic surgery since its first appearance required. It presents a most complete and correct view of the present state of knowledge on ophthalmology and ophthalmic surgery, collected with great fidelity from all the best oculists, ancient and modern, foreign and domestic. Dr Mackenzie has further followed the present fashion of illustration, and introduced numerous wood-cuts illustrative of the most important diseases of the eye and its appendages, of the principal operations indicated in each case, and of the most eligible instruments for their performance.

The only drawback that can be urged against the work is its size, the minuteness of its details, and the number of cases introduced. But to this it may be replied that, without these qualifications, it could not be recommended, as it now is, as containing a complete view of the present state of ophthalmological knowl

PART III.

MEDICAL INTELLIGENCE.

ANATOMY AND PHYSIOLOGY.

Discovery of Muscles which rotate the Dorsal Vertebræ. By Prof. **Theil** of Bern.—(*Muller's Archiv.* Heft ii. 1839.)—The *rotatores dorsi* are muscular fasciculi situate beneath the *multifidus spinæ*, and separated from its fasciculi by cellular tissue. They are found only in the dorsal portion of the spine, and are usually only eleven in number on each side. They arise from the transverse processes of the dorsal vertebræ, from the second to the eleventh, and each is attached by fibres, running transversely inwards, to the arch of the vertebræ next above that from which it arises. Each muscle, covered by the *multifidus spinæ*, is fixed by short tendinous fibres to the upper edge and posterior surface of the transverse process, and by fleshy fibres to the lower edge, and in part to the posterior surface of the arch, up to the base of the spinous process. The muscles are not all of the same size; the lowest are largest, except the eleventh, which is small. The uppermost generally passes from the transverse process of the second dorsal vertebræ, over the first, to the arch of the seventh cervical.

Professor Theil has discovered analogous muscles in the dorsal portion of the spine in several species of Quadrumana, Carnivora, and Rodentia.

Congenital absence of the Liver. By Dr **Kieselbach**.—(*Froriep's Neue Notizen*, No. 159.)—This rare malformation was found by Dr Kieselbach in a human embryo which was in all other respects well formed. The umbilical vein passed through the umbilicus to the part which the liver usually occupies, without dividing; there the portal vein received it, and divided it into two branches, one of which passed to the *vena cava*, but the other divided into innumerable ramifying branches, which terminated blindly. There were no traces of hepatic veins. The flocculent divisions of the branches of the umbilical vein cannot, therefore, be regarded as the residue of a liver which had once existed, and at a later period, from some cause wasted. The case is probably to be regarded as one of those rare arrests of developement, in which one of the most important organs is not formed, but in which a vascular growth occupies its place.

Experimental Researches on the Functions of the Brain. By M. **Nonat**.—(*Gazette Medicale de Paris*, 19th October 1839.)—According to M. Nonat the lobes of the brain, the *corpus callosum*, the fornix, the *corpora striata*, the optic layers, the cerebellum, and the crura of the cerebrum, are not possessed of general sensibility, as evidenced by touch. In the lobe of the fourth ventricle, as was shown by MM. Magendie and Desmoulins, resides the faculty of the perception of general sensibility. Physiologists are wrong in placing the seat of sensibility in the cerebellum, as an animal from which the whole of the cerebellum has been removed retains the faculty of seeing, hearing, tasting, feeling, and smelling.

With regard to the influence of the cerebellum over the movements of progression or of standing, M. Nonat has arrived at the following results:

1. The lobes of the cerebrum direct the movements. Thus, when we wish to go from one place to another, it is by the action of the cerebral lobes that we are enabled to execute the movements necessary for this purpose. A rabbit deprived of the lobes of the brain executes the same movements as before; it is only weakened; but it can no longer avoid any obstacle, it cannot find its food; in short, it is deprived of that principle which formerly gave to all its movements a determinate direction.
2. The *corpora striata* regulate the movements backwards.
3. The *thalami optici* exercise a considerable influence on the actions necessary for standing; they furnish in a great measure the principle which supports the energy of muscular contraction.
4. The cerebellum directs the regularity of the forward movements; it appears to direct the movements of the lower extremities; and probably has also some influence on the equilibrium of the movements.
5. The circle formed by the cerebellum, its crura, and the transverse fibres of the cerebral protuberance regulates the movements of rotation around the axis of the animal.
6. The *tubercula quadrigemina* are necessary to the regular exercise of motion. Their lesion disturbs the harmony of the actions required for progression or for standing. This result agrees with that of M. Serres.
7. The lobe of the fourth ventricle contains a principle which overrules and regulates the respiratory movements, vomiting and crying. In this part of the encephalon resides a principle, in virtue of which an animal has the consciousness of tactile, and also of sonorous impressions.

Plant Case for growing plants without fresh supplies of air or water. By DANIEL ELLIS.—(*Gardeners' Magazine*, Vol. xv.)—About eleven years ago, Mr Ward of London noticed that two plants which had sprung from some moist mould contained in a covered wide-mouthed glass bottle, continued to grow for nearly four years without receiving any additional supplies of air or water. From this circumstance, so well improved, has arisen the interesting results about to be noticed. Mr Ward found that, by enclosing plants in close glazed frames, he was enabled in the very centre of London to raise and break into flower plants which otherwise would have required both purer air and increased temperature; and also, that, during all the time they were kept in these frames, they required no fresh supplies of air or water. By this means he was enabled to transmit living plants from this country to New Holland, to Alexandria, and Cairo, and receive in exchange in the same manner other live plants, natives of these countries, in a perfectly healthy state, though during their long voyage they did not receive fresh supplies of either air or water. He did not find that the plants were injured by the variations of temperature through which they had passed, which he attributes to the quiet state of the atmosphere within the case.

Mr Ellis has published the result of his own experience, and also described minutely the portable case which he employed, together with the names of the plants enclosed in it. The case consists of a box three feet long by eighteen inches broad, and eight inches and a half in depth, and was accurately fitted with a glass cover, with its frame-work of brass, nineteen inches and a half in height; the whole being raised on a stand twenty-two inches in height. Two holes were left at the bottom of the box for draining off the water, and a small door in the glass frame to admit of the removal of dead leaves, &c. The whole was put together so accurately as to prevent any exchange of air between the internal and external atmosphere. The box was filled with broken potsherds to the depth of two inches, over which was spread one inch of very turfy loam, and then filled with a soil composed of equal parts of peat and loam, with about a twentieth part of coarse pure sand. After being planted, about three or four gallons of water were poured over the whole from a fine rosed watering pot, and allowed to drain for twenty-four hours, when the two holes in the bottom of the box were tightly plugged with corks, and the glass cover put on. During the heat of the day the enclosed atmosphere became loaded with moisture, which condensed on the side of the glass case and returned to the soil. The plants were thus kept supplied with a quantity of moisture sufficient for nutrition.

Mr Ward remarks that the success of the plan will be in proportion to the admission of light to all parts of the growing plants, and that in every place where there is light, even in the centre of the most crowded and smoky cities, plants of almost every family may be grown. After being put up in this manner the plants require no further care.

Important results have already followed this discovery of Mr Ward, as by it, plants, which it would have been impossible to have transmitted otherwise, are now safely and without trouble carried to and from all parts of the world.

The most interesting part of the inquiry is, how plants thus confined thrive without a fresh supply of air, an element thought to be so essential to their healthy growth. Mr Ellis explains this on the supposition that the carbonic acid thrown out by the plant during its growth is immediately decomposed by the combined action of the light and the colouring matter of the leaves, which thus restores to the air the oxygen which had been previously absorbed by the plant for the formation of the carbonic acid; so that the air in the case, like the water, amid the vicissitudes of perpetual change, is maintained in a state of nearly uniform composition and purity.

CHEMISTRY.

On the Composition of Milk. By M. DONNE.—(*Compte Rendu de l'Academie des Sciences*, September 16, 1839.)—M. Donné considers milk to consist of a fluid holding in solution caseum, a particular variety of sugar and salts, and in a state of suspension globules of fatty matter or butter. Alcohol and ether dissolve the fatty or milky globules, but have no action on the caseum. A watery solution of iodine colours the caseum yellow, but has no action on the milky globules. These facts prove that the caseum forms no part of the milky globules, and that it does not exist in a concrete form in the milk.

All the milky globules are retained by the filter, and the liquid which passes through it is transparent as water, and deposits the caseum on the addition of an acid. This fact proves that the caseum is in a state of solution, and also that the white colour of the milk is owing to the presence of the milky or fatty globules which are suspended in it. Milk may, therefore, be considered as an emulsion.

When milk is allowed to stand, the cream ascends to the surface. The caseum is only the separation of the milky globules on account of their lighter specific gravity; and if the milk be examined in a transparent vessel, it will be seen that the layer next the cream is the whitest, whilst that at the bottom of the vessel is of a greenish hue, and semitransparent. This difference of hue is owing to the greater or lesser proportion of milky globules in the different parts of the fluid.

When it is allowed to stand some time longer it becomes acid, though it was alkaline when first drawn. The cream gradually thickens, the caseum becomes consolidated, gaseous matters are disengaged, a strong odour of rotten cheese is perceived, and the microscope discovers a multitude of animalcules and infusory vegetables. If the milky globules be previously separated, they are found to become rapidly acid; whilst the watery portions holding in solution the caseum undergo the alkaline or putrefactive decomposition.

The infusory vegetables in milk are not observable till long after it has undergone the acid change. It cannot, therefore, be considered as the cause of the acetous fermentation, as is remarked in vegetable infusions, which undergo the alcoholic fermentation. The infusory animalcules exist equally in the acid as in the alkaline part of the milk during these changes.

M. Donné has remarked, that there is a fixed relation between the secretion of the colostrum in the breast before delivery, and the secretion of the milk after that process; and he thinks that women may be in this respect divided into three classes. The *first* class includes those in whom there is scarcely any milky secretion till delivery is over. In them the colostrum consists of a viscous liquid containing a very few milky globules mixed with granular bodies. In these circumstances the milk after delivery is always poor, and in small quantity. In the *second* class the colostrum is more or less abundant, but is poor in milky globules, which are small and ill-formed. Besides the granular bodies, mucous globules are detected in the colostrum. After delivery, the milk is more or less abundant, but is poor and serous. In the *third* class, the colostrum is rich in regularly-formed milky globules, and is only mixed with the usual granular bodies. The milk which is secreted after delivery is abundant, rich, and of good quality. It is this class of women who ought always to be preferred as nurses.

MEDICAL PATHOLOGY AND THERAPEUTICS.

On the causes of sudden Death. By ALPHONSE DEVERGIE.—(*Annales d'Hygiene Publique,* July 1838.) It is the common opinion that apoplexy is the most frequent cause of sudden death. M. A. Devergie has endeavoured to ascertain how far this opinion is founded in truth, and has found that sudden death from affection of the brain is rare. Of forty cases which he has examined he has met with four only in which death resulted from an affection of the brain; three in which there was congestion of the brain and spinal marrow; and twelve in which the brain and lungs were simultaneously affected. Sudden death from an affection of the lungs alone is the most common. M. Devergie met with twelve cases of this out of forty; and if to these we add the twelve examples of sudden death in which the lungs and brain were both affected, we shall have twenty-four out of forty in which the lungs were affected in cases of sudden death. Death from affection of the heart was the most rare. M. Devergie met with it only three times.

It results from these researches that, if arranged according to the order of their frequency, sudden deaths are occasioned, 1. from an affection of the lungs; 2. of the lungs and brain; 3. of the brain and spinal marrow; 4. from hemorrhage; 5. from an affection of the heart. It is consequently an error to regard apoplexy, that is circumscribed cerebral hemorrhage, as the most common cause of sudden death, since of forty cases M. Devergie observed an apoplectic effusion of blood only once. Sanguineous congestions of the meninges should not be ranked among cerebral hemorrhages. M. Devergie further ascertained that sudden deaths were more frequent during winter, and more common in men than women. Among the forty deaths noted only five were of women. He also observed that sudden deaths occur chiefly among persons from 40 to 50, and 60 to 70 years of age.

Spontaneous Hæmorrhage into the Peritoneum, following suppression of Menstruation.—By M. Lechaptois. (*Archives Generales,* Juin 1839.)—Madame Rousset, aged 29, of good constitution, felt for several weeks a painful sensation of tension and fulness in the umbilical region; but as she had ceased to menstruate, and had already had two children, she supposed she was again pregnant, and did not take medical advice. On the evening of the 13th October last, after having washed the door steps, the pain from having been slight, suddenly increased in severity, and acquired in the course of two hours an alarming character. Her face became pale, her skin covered with a copious cold perspiration, and she soon after died with vomiting, diarrhœa, and frightful convulsions.

On examination, forty-eight hours after death, excepting its excessive pallor, the body presented nothing anormal. On laying open the abdomen about two pints of black and fluid blood were found effused into this cavity. The mesentery presented on its anterior surface several clots, as did also the mesocolon.

The heart, the principal arterial trunks, and the various branches of the abdominal aorta, were carefully examined, and found healthy; the mesenteric vessels, traced as far as possible, were healthy, and only remarkable for their size; but no rupture, nor any traces of inflammatory action, were visible.

The uterus contained no embryo; its volume was less than that usually found in women who have borne children; it was in fact rather atrophied. There seemed no reason to doubt that the amenorrhœa produced excessive engorgement of the mesenteric vessels, from which hemorrhage, without visible rupture, had taken place after laborious exertion in a position in which they were dependent.

On the Treatment of Acute Rheumatism by Opium. By D. J. Corrigan, M. D.—(*Dublin Journal of Medical Science,* November 1839.)—Eight cases of acute rheumatism cured by opium alone are given in detail by Dr Corrigan, and as the practice appears to be novel, whilst it recommends itself from its simplicity and general applicability, a short notice of these cases may be read with interest. When he first commenced the opium treatment he was afraid to trust to it alone, and therefore combined it with calomel; but finding that no good resulted from this combination, he dropped the calomel, and continued the opium alone.

Three of the cases are selected to illustrate the mode in which the remedy was administered.

Mr R., aged 30, was seen on the 19th January 1838. For several days he suffered from flying pains, but for the last three days he has been under the most acute suffering from pain in the shoulders, in the back of the neck, along the loins, in the knee, wrist, and ankle-joints. The knees, ankles, and wrists were swollen, and exquisitely painful. He had slept none for three nights; the pulse was 132; the bowels free; the tongue covered with a thick white coat; the urine very high-coloured, and depositing a pink sediment; and the skin partially perspiring. One grain of opium with two of calomel were given every third hour, and opiate fomentations were applied to the joints. On the next day the pains were less, and the pulse had fallen to 120; but he had not slept. The opium was therefore increased to a grain and a half every third hour.

On the 21st he had slept some, and the pulse had fallen to 104. The pains were greatly diminished, and the swellings of the joints somewhat lessened. The opium was continued in the same dose. Next day he was found to have slept well, and the pulse had fallen to 92. The opium without the calomel was continued for three days longer in the dose of a grain and a half every third hour, at the end of which period, being quite free from pain, and with a quiet pulse, he was put on bark.

Dr Corrigan attended his friend Dr Aldridge, who had a very severe rheumatic attack of three days' duration when he was first seen by Dr Corrigan. Nearly all the large joints were swollen and acutely painful, and the pains were shifting from joint to joint. The pulse was 120; the tongue very foul, but moist; and the want of rest from the agony of the pain was most distressing. He was immediately put on the opiate treatment. He first got one grain every two hours; the quantity was then increased to one grain every hour; and this was continued for thirteen days, with the administration of an occasional purgative. On the fourteenth day he began to take the *Mist. Guaiaci c. Sulph. Quinæ*; and on the fifteenth day he was walking about his parlour, complaining only of not being so strong as usual, but free from pain and swelling. Dr Aldridge calculated he had taken about two hundred grains of opium during the treatment.

Mr H. aged 26, had suffered for three days under a very acute attack of rheumatism. The shoulders, wrists, and knees were swollen, and very painful; and the pains had been so severe that for three nights he had not closed an eye. His pulse was 120 and full; and his tongue moist. He was put on the opium treatment, and took every day for six days from eight to ten grains of opium. On the seventh day, he began to take alongst with the opium the *Mist. Guaiaci c. Sulph. Quinæ*, and on the eighth day of attendance, he only complained of some stiffness in the affected joints. His pulse had fallen to 76, and his appetite was good.

In one of his cases pericarditis was threatened, the pulse became affected, oppression and constriction across the chest were felt, the countenance became anxious, and the patient was bathed in profuse perspiration. These unpleasant symptoms subsided under the steady use of the opium combined with a grain and a half of quinine to each dose.

Dr Corrigan remarks, that "the most important rule to be remembered in employing opium for the cure of acute rheumatism is, that full and sufficient doses shall be exhibited;" unless carried to this length it is sure to end in disappointment. He mentions it as a singular circumstance, that sometimes during the progress of the cure under the opium, diarrhœa should come on so as to require the exhibition of chalk and kino. He recommends the local application of flannel soaked in warm spirit of turpentine, or in camphorated spirit, or in simple decoction of poppy heads, to the inflamed surfaces. If the patient should suffer much from constant profuse perspirations, he recommends the conjunction of sulphate of quinine with the opium.

Dr Corrigan thinks this plan of treatment superior to all others, because it shortens the duration of the attack, alleviates the sufferings of the patient, husbands the strength, and prevents the complications of endocarditis, pericarditis, &c. whith so often complicate this disease, and are the cause of prolonged suffering ending only in death.

[*Note.*—Several years ago we had an opportunity of testing the efficacy of this practice, and found it superior to every other. Large doses of opium were at first given, not with the view of curing the disease but of alleviating the intense suffering under which the patient laboured. Since then we have employed it in several cases, and always with the most marked benefit; the disease seldom lasting beyond a fortnight, and being much alleviated during the whole course of the treatment.—Ed.]

On a peculiar affection of the Uvula. By Edward Thompson.—(*Trans. Prov. Med. and Surg. Association*, Vol. vii.)—Mr Thompson describes the affection to consist of an elongation of the mucous coat of the uvula produced by the effusion of lymph, (serous fluid?) into the submucous cellular tissue; this elongation sometimes going to the length of two inches. The fluid contained within the expanded mucous coat is of a light amber colour, and so pellucid that the handle of a tea-spoon is readily seen if placed behind it. The body of the uvula itself appears slightly enlarged, and of increased redness, as well as the palatine arches; but the tonsils are not usually affected. He considers the alteration to be the result of active inflammation of the uvula.

The attendant symptoms are those of simple sore throat in the first instance, but afterwards a huskiness of voice, with occasional brief loss of it, are remarked. Soon a distressing feeling of suffocation comes on, and, as the elongation goes on, the patient runs great risk of being suffocated from the pendulous portion passing into the larynx. This in fact is the chief danger, and the patient sometimes falls down with every symptom of suffocation. When the throat is examined the pellucid elongation is very apt to be overlooked, as the extremity of the body of the uvula is seen red and somewhat swollen. The treatment is very simple when the malady is discovered; a simple incision with the lancet, or a cut with a pair of scissors, or even entire removal of the pendulous portion, if large, being all that is required. The membrane usually collapses after the removal of the fluid, and a very small opening is sufficient in most cases for its discharge.

On the existence of Syphilis in Animals. By Dr Pauli of Landau. (*Schmidt's Jahrbucher*, March 1839.) Dr Pauli has recorded two cases which appear to prove that syphilis exists in animals. A veterinary surgeon brought him the penis of a bull on which was a condyloma of the size of a walnut, similar in all respects to that of the human subject. All the cows which this animal had covered were attacked with a mucous running, which generally stopped after a few weeks, but which sometimes required the employment of astringent injections. Another bull infected in a similar manner the cows which it covered; and it was afterwards discovered that it had a similar condyloma of the size of a chestnut on the anterior part of the penis. The cows in this case recovered spontaneously.

On the Employment of Sea Salt (Chloride of Sodium) in Pulmonary Consumption, Scrofulous affections, &c. By M. Amede Latour. (*Gazette des Medecins Practiciens*, 1839.)—M. Latour was first induced to give a trial to this remedy in phthisis, from its reported efficacy in preventing or curing pulmonary complaints among the lower animals. A great mortality prevails amongst the apes and monkeys confined in menageries, chiefly from pulmonary complaints; and the proprietor of a menagerie found, that by the free use of sea salt, he was enabled to preserve these animals in health for seven or eight years; and, even after a cough had manifested itself, the administration of the salt was followed by a rapid cure.

M. Latour relates three cases in the human subject, in which the administration of salt appears to have been followed by the happiest results. In one of the cases, the disease had gone so far, that there was distinct cavernous rattle with pectoriloquy, muco-purulent and purulent expectoration streaked with blood, great emaciation, hectic fever, &c. and yet the patient made a perfect recovery at the end of a few months, the sea salt having been given uninterruptedly for sixty days.

M. Latour directs a particular regimen to be followed during the treatment. The aliment should consist almost exclusively of beef or mutton grilled or roasted, of good rich soups, or animal jellies. The patient should partake of these in small quantity at a time, but often, and should drink a little good old wine diluted with water. Every fine day, when the sun shines, and during its warmest period, the patient should take gentle exercise in the open air; and his chamber should be well aired twice or thrice a-day. Flannel is recommended to be worn next the skin.

The mode of administration of the salt is as follows: Half a drachm to a drachm of the chloride of sodium is administered daily, either in a glass of beef-tea, or in some pectoral infusion, or if this should excite cough, it may be given in divided doses made up into bread pills, drinking a little beef-tea afterwards. It is best to commence with small doses, as the sudden introduction into the system of such a powerful stimulant, is apt to be followed by congestions of blood in the digestive organs or lungs. A few cresses are recommended to be eaten once or twice every week, after having been well sprinkled with common salt, but no vinegar or oil is allowed with them. To relieve the pains in the chest, and the burning sensations of which the patient complains, instead of the usual pectoral drinks he prescribes the following: Carrots are to be well boiled in a moderate quantity of water; they are then to be well beaten, and passed through a sieve. The fluid which passes through is then mixed with fresh milk, sweetened with a small quantity of sugar, and flavoured with orange-peel. This compound the patient drinks at his own discretion. In general some thirst is at first caused by the administration of the sea salt, and for this M. Latour directs a weak infusion of gentian flavoured with orange-peel.

Successful treatment of Aortic Aneurism by Acetate of Lead. By MM. Dusol and Legroux. (*Archives Generales de Medecine,* Sept. 1839.)—Aortic aneurism has been always considered to be an incurable affection, the only cases of cure known being the result of natural causes. The treatment generally pursued, viz. oft-repeated bleedings and starvation, evidently increase the serosity or watery parts of the blood, diminish its coagulability, and prevent the formation of those fibrous clots on the formation of which the cure depends. Dupuytren was amongst the first who recommended and employed the acetate of lead in this disease, and his success induced a few other practitioners to give it a fair trial. The results of these trials, MM. Dusol and Legroux have laid before the public. Three cases are recorded at length, but the symptoms and treatment are so similar in all that one will suffice as an example.

Pecheur, 37 years of age, was admitted into the wards of M. Dupuytren, in the Hotel-Dieu, on the 12th May 1829, with a pulsating tumour on the upper and right side of the sternum. Three years before, when lifting a heavy piece of wood, he experienced a sudden attack of pain with difficult respiration in the right side of his chest. He continued to work, however, for fifteen months, but the oppression in the region of the chest augmented, and was attended with violent headach, acute pain in the right shoulder, and right side of the neck, and along the course of the vessels of that region. For this he was bled, but without much relief. After a few months, a tumour appeared on the thorax, which gradually augmented in volume till it acquired the size of an egg, when it became stationary. In proportion as the tumour augmented in volume externally, the dyspnœa diminished; but its recurrence forced the patient to apply for relief at the Hospital. The pulsation of the tumour was perfectly synchronous with that of the pulse; the skin which covered it was red and stretched. There was considerable cough and much dyspnœa, and the patient was obliged to maintain the sitting posture. There was facial congestion, difficult deglutition, and frightful dreams, but the appetite was pretty good, and the bowels were regular. Blood-letting to the extent of seven or eight ounces having afforded no relief, M. Dupuytren ordered two pills, each containing one grain of the acetate of lead. On the following day, and every day after, he took six pills; and from this moment amelioration of all the symptoms took place, so that by the 1st June the tumour had almost completely disappeared, and the other symptoms were much relieved.

The number of pills was gradually increased to ten daily, and compresses dipped in a saturnine lotion were applied over the tumour. This treatment was continued till the 29th June, when it was discontinued, from its exciting nausea and vomiting, It was again renewed on the 4th July, and continued till the 19th, when the patient left the hospital, feeling himself quite well.

The amelioration in the three cases related was so remarkable and rapid, that it cannot fail to induce similar trials to be made in this country. Operations on the larger vessels near the heart for the cure of aneurism have very generally been unsuccessful, and anything which could give a chance of life, particularly without undergoing the danger of an operation, should be eagerly adopted.

Spirit of Turpentine in Iritis.—(*London Medical Gazette*, 13th April 1839.)—Mr Arnott strongly recommends the internal administration of the spirit of turpentine in iritis, after the more active inflammatory symptoms have been reduced by bleeding and tartar emetic. This remedy he has found to succeed in curing the disease when mercury and the strictest antiphlogistic regimen had failed. The spirit of turpentine was administered, as recommended by Mr Hugh Carmichael, in emulsion, in the dose of a drachm three times a day; and the only objection to the employment of the remedy was the difficulty or even impossibility of some stomachs retaining it beyond a certain length of time. This, however, might be obviated by diminishing each dose, but increasing their frequency.

Chancery Cachexia. By Dr JONATHAN OSBORNE.—(*London Medical Gazette*, Dec. 6, 1839, p. 398.)—Under this title Dr Osborne gives the particulars of a case of general impaired health, with successive attacks of acute disorder, induced to all appearance by the mental anxiety and distress arising from the vexatious delays and annoyance of litigation in the Court of Chancery. The subject of it was a clergyman of the Established Church of Ireland, who had passed through an active and useful life in the enjoyment of uninterrupted good health, till the 67th year of age, when Dr Osborne was first requested to see him in the beginning of 1838. The symptoms of which he complained Dr Osborne referred to irritation of the mucous membrane of the stomach, and at the same time the bowels were torpid, to which latter state he had always been a stranger. His habits had been strictly temperate, and all his enjoyments had been domestic. When interrogated as to the cause of his stomach symptoms, he stated that they were entirely occasioned by a course of proceedings in the Court of Chancery, in which he had become involved, in consequence of being guardian to children nearly related to him, and in the settlement of whose affairs he had been forced into a Chancery litigation, which had kept him in a state of perpetual anxiety, agitation, and disappointed expectation for nearly three years previously. Under treatment and strict attention to diet he recovered, and was able to resume his accustomed walking exercise for about two months, when Dr Osborne was again requested to see him. He then complained of cough, his pulse was not accelerated; and on examining the chest no other symptom of disease was found, except those of *bronchitis*. This yielded to treatment, and Dr Osborne then expressed a wish that his patient might go to the country. To this, however, he would not consent, as the accounts occupied his mind most, and he continued to hope that, by personal attention to them, it might be in his power to bring them to a settlement.

In the midst of the violent storm on the night of the 6th of January (1839) a messenger came to inform Dr Osborne that the reverend gentleman was dying. Dr Osborne found him gasping for breath in a violent paroxysm of spasmodic asthma. On the previous evening he was in his usual health, except that the "law's delay" was observed by his wife to have caused a constant state of perturbation and excitability. By the application of hot water to the hands and feet, a sinapism to the chest, and the use of cordials, his breathing was nearly restored on the following morning, and after a few days he was able to leave his bed. After this, an interval of about one month elapsed, when he complained of cough and difficult breathing. Dr Osborne having ascertained the presence of some crepitus in the right lung, took blood from the arm, and, under the usual treatment for pneumonia, in about a week, that with all the other symptoms entirely disappeared.

During the whole of this period the accounts in the Masters' Office were still proceeding, and the patient on each recovery of health was anew exposed to "the hope deferred that maketh the heart sick." His own funds being involved in the cause he suffered much from the *res angusta domi.* "Any reader who has ever been engaged in what is called an equity suit can readily supply what I omit; he can tell how individuals, honourable and estimable in all the relations of life, when engaged professionally appear to think themselves absolved from ordinary rules of justice, and witness the fleecing of those individuals who have been so badly advised as to apply to the law for redress, without any compunction—viewing it as quite a professional and proper thing, making no account of the heart-burnings and macerations consequent on the artful delays and delusive hopes of settlements thown out; it being a very common result, and one which excites much merriment amongst them, that besides the loss of the property at issue, both parties, plaintiff and defendant, are dismissed out of Court utterly ruined."

The reverend patient had resumed his examination of the accounts about six weeks, when they began to exercise their usual and specific action on his health. The appetite declined, a short cough came on, and gradually increased. This he did not regard with apprehension, as his mind was occupied with daily expectation of a settlement, which, whenever it took place, he was convinced, would enable him to recover his wonted cheerfulness and health. Dr Osborne, who was sent for at this time, recognized the presence of moist crepitating rattle in the left scapular region, with the want of vesicular respiration in the corresponding portion of the right lung; and in a few days hemoptysis took place. Soon after, the strength rapidly declined, and he was compelled to confine himself constantly to bed. His mind was composed; and he contemplated the probability of a fatal termination to his disease with resignation and full confidence in the Divine mercy; but always indulged the delusive hope that there was a prospect of a settlement of the accounts in the Masters' Office.

The state of this gentleman continued much the same, except that the cough was considerably alleviated, until the end of April, when one night he was attacked, without any known or assignable cause, with symptoms of peritonitis. The attack was not severe, but as it did not yield to the first employed remedies, Dr Osborne requested the assistance of Sir Henry Marsh, who concurred in the opinion formed of the immediate danger of the patient. He suffered less pain than usually attends *peritonitis* in the same degree; but the tendency to sink soon became manifest, and this patient died, Dr Osborne says, in peace and charity with all mankind, within forty-eight hours from the commencement of the attack.

At the date of the communication, November 1839, no settlement of the accounts in Chancery had been obtained.

The whole train of bad health and the acute attacks in different organs in this case, Dr Osborne ascribes to the noxious influence of the doubt, anxiety, and mental distress induced by protracted litigation, more especially the ruinous litigation which is carried on in the Court of Chancery. These causes produced, he argues, in the frame of a person otherwise sound and previously healthy, the same temperament, consisting in a combination of debility and irritability, which is found only in drinkers of ardent spirits, or in those who have been subjected to a long course of grief, anxiety, and repeated disappointment. The patient gains, he remarks, in these cases only alleviation and never permanent recovery, because recovery from one attack is usually followed by another in some other and frequently distant part. The author sympathized with the condition of his patient so much the more, and estimated the influence of the cause of his illness the more clearly, that he himself has been, we are sorry to learn, detained above three years in the Masters' Office, in a matter in which there is no difference of opinion, and which might be settled in three days, and he is still kept in the same painful state of protracted uncertainty. Dr Osborne remarks with great truth and justice that, so long as litigation can be indefinitely prolonged as at present, there is no security for health or life any more than for property. Every man is liable, he adds, to be crushed according to law, if he have an enemy who chooses to go to the expense of doing so. He expresses the hope that the recital of cases such as the present may rouse the public mind to put an end to a system so deleterious and demoralizing, and maintains that those who unite in the solemn prayer, that " peace and happiness, truth and justice, religion and piety, may be established among us for all generations," are especially called on to inquire, whether we as a nation, can hope to enjoy any of those blessings, so long as a system of chicane and extortion is permitted to continue.

Dr Osborne is evidently both an amiable and benevolent man, as well as a good physician. But it is to be feared that his philanthropic wishes will not be realized for a very long time. If the truth must be told, it is to be found in the gross discordance between our principles moral and religious, and their influence on our conduct. Though the Christian religion has been established in these islands nearly 1000 years, and though the purest form of it has been the religion of the country by law established for nearly 300 years, yet its precepts are as little allowed to influence the conduct of the great body of the community, as if Jesus Christ had never delivered the sermon on the Mount,—as if St Paul had never inculcated charity and good will among men,—and as if the New Testament had been destroyed, and all trace of the actions and precepts recorded in its pages had been irrecoverably lost. The morality of Christianity is a mere speculative theory with the majority of mankind, to be admired and beheld at a respectful distance, but never to be allowed to influence the actions of mankind, much less to pervade the spirit of our legislative enactments and forms. This is the true cause of such evils as those which Dr Osborne exemplifies and deplores. Wherever facilities are afforded for the employment of chicane or the gratification of malice, men are much more likely to employ those means than to refrain from them, partly from the desire to benefit themselves, and next to that from the wish to injure others.

SURGICAL PATHOLOGY AND THERAPEUTICS.

Section of the Ham-string Tendons for the cure of contracted Knee-joint. By Benjamin Phillips.—(*London Medical Gazette*, July 20, 1839.)—A young woman, 29 years of age, had suffered for several years from rheumatism, which affected principally the knee-joints and hands. During this period both legs became more and more flexed on the thighs, and extension at length became impracticable. A variety of means were used for the purpose of procuring extension, but without any amendment.

The success of operations for the cure of club-foot by cutting the *tendo Achillis*, and also that of M. Lutens of Antwerp, who cured an obstinate flexion of the knee by dividing the ham-strings, induced Mr Phillips to recommend section of the ham-string tendons in this case.

The patient lay on her face, and the limb was extended as far as possible, so as to produce a marked cord-like tension of the ham-string tendons. A straight blunt-pointed knife was introduced with its flat surface to the tendon of the biceps, and between it and the bone. Its cutting edge was then directed upon the tendon, and by a gentle sawing motion cut it through without injuring the integuments. The cut surfaces retracted to the extent of about one inch. A similar course was taken with the semitendinosus. No blood was lost; and the edges of the small wound were brought together by means of plaster. On the third day, when extension was about to be made, it was found that the semi-membranosus muscle would not yield. It was accordingly cut through in the same cautious manner, the incisions being repeated till resistance was no longer offered. Its section allowed the extension to be increased by an additional inch.

A modification of Amesbury's apparatus was used for procuring the extension, and the extension screw was given one turn daily. Considerable pain at the patella was complained of after a few days, but by dividing the knee-cap of the instrument into two portions, and placing one above and another below the patella, the pain and discomfort ceased, and allowed the extension to proceed. The cure went on satisfactorily from this date, and when the apparatus was removed, which was done when the extension was complete, it was found that there was scarcely any tendency to contraction, and that the muscles were capable of extending and flexing the leg at will, though at first very slowly.

Mr Phillips quotes from the Thesis of M. Duval seven successful cases of operation for contraction of the knee-joint. In the first case the contraction had resulted from phlegmonous inflammation around the knee-joint. The tendons of the biceps, the semitendinosus and semimembranosus muscles were divided, and after three weeks of extension the boy was able to walk without crutches.

In the second case, the contraction followed a blow on the knee, which produced inflammation and abscess. The same parts were cut through, and in six weeks he was able to walk pretty well.

The third patient had had an attack of meningitis, which caused paralysis of the left side of the body and contraction of the ham-string tendons. Twenty days after the operation the extension was complete, and at the end of seventy-three days he could extend it himself, but the paralysis interfered with the progression.

In the fourth case, the contraction was the consequence of suppurative inflammation around the joint, with abscesses which had been opened at various intervals during five years. Eight months were required to restore the limb to its natural direction after the performance of the operation.

In the fifth case, swelling of the knee, with the eruption of ampullæ, had accompanied the contraction of the knee. Thirty-two days after the section, and the employment of the extending apparatus, the patient began to walk.

The sixth patient had paralysis of the right inferior extremity, accompanied by considerable flexion of the leg on the thigh. M. Duval thought it depended on contraction of the muscles of the calf, which are also flexors of the thigh. He cut the *tendo Achillis*, and in six weeks the cure was complete.

The contraction in the seventh case resulted from an injury. In twenty-five days after the operation, and the employment of extension, the limb was perfectly straight, and the patient could walk on it.

OBSTETRICS.

Abortion with symptoms of Poisoning produced by the use of Rue. By M. Th. Helie.—(*Annales d'Hygiène*, Vol. xx.)—A young girl, of short stature, but robust constitution, who had had a difficult labour at the age of 16, brought on a miscarriage in the following manner. She sliced three fresh roots of rue as large as her finger, and boiled them in a pound and a-half of water, down to three cupfuls, which she took in the evening at a draught. She was immediately seized with acute pain in her stomach, which was soon followed by so great and general a feeling of faintness that she thought she was going to die; she saw every thing as through a mist, tottered, and felt giddy, as if intoxicated. Violent and continued efforts to vomit soon came on, which continued the whole night. Colicky pains, at first slight, but afterwards more severe, were experienced the next day. Towards the evening of the second day they became violent, and followed one another in quick succession. Now small discharges of blood from the vagina, then large clots, and in a few minutes afterwards abortion took place, forty-eight hours after the decoction of rue had been swallowed, the girl not having been confined to her bed. The unpleasant symptoms caused by the rue went off in a few days.

The next case was that of a maid-servant, 25 years of age, who had gone to a farmer's for a few days to get rid of a complaint with which she said she had been recently attacked. During the first two days she had a good appetite; but on the third she was seized with continued painful and difficult vomiting, attended with considerable fever and thirst. This had continued for two days before she was seen by M. Helie. She was then in a drowsy state, but was easily roused and answered questions slowly and with apparent difficulty. She resembled in look a person intoxicated. Her sight was dim, the pupil contracted, her pulse large and soft, but with little heat of skin. The urine and alvine evacuations had been suppressed since the vomiting had commenced. The abdomen was somewhat painful on pressure; and M. Helie discovered that she was in about the seventh month of pregnancy. This was on the 5th of December, at which time there were no symptoms of abortion, as the abdomen was soft, and there was no discharge from the vagina.

On the 6th, the vomiting had abated, but the delirium, pain of abdomen, and other symptoms had rather increased. On raising the bed-clothes M. Helie was struck with the characteristic odour of parturition, and found between her thighs two children still attached to the placenta, which was also thrown off. The children appeared to have reached six and a-half or seven months of fœtal existence, and to have been still-born. The uterus had contracted well; and though the pains during the expulsion of the fœtuses had been severe, she had mastered them so well that several individuals who were in the room had no suspicion of the occurrence.

The state of somnolency and stupor, tossing of the limbs and moaning, continued for this and the next day. She passed urine, and the bowels were moved; the lochia also flowed. The vomiting returned on the 8th, and was attended with fever, increased delirium, convulsive movements of the limbs, and swelling of the breasts.

On the 9th and 10th, the symptoms increased in severity, the tongue became enormously swelled, and there was copious salivation. M. Helie now learned that she had taken a decoction of the leaves of rue; but he was unable to learn its strength, or how long she had continued it before these symptoms came on.

The symptoms of poisoning gradually went off, but those of typhous fever took their place, and it was a considerable time before she regained her health and strength.

The third case was that of a young girl who had been four or five months pregnant, but, wishing to induce abortion, took large doses of the expressed juice of fresh rue leaves for several days. The symptoms induced very much resembled those of the former cases. Somnolency, prostration of strength, fainting, slowness of pulse, coldness of skin, and jactitation of the limbs, were all observed. Swelling of the tongue with copious salivation was also noticed. Abortion did not take place till the sixth day from the beginning of the manifestation of the symptoms of poisoning. The symptoms of poisoning, however, lasted for twelve days, when they abated, and the girl recovered.

New and successful Method of treating Prolapsus Uteri.—(*London Medical Gazette*, 18th May 1839.)—Mr Benjamin Phillips has in one case of *Prolapsus Uteri*, treated by him at the St Marylebone Infirmary, succeeded in effecting a cure, or at least in affording complete relief, by destroying a portion of the mucous lining of the vagina by means of nitric acid. The contraction consequent on the separation of the sloughs reduced the size of the vagina so much as effectually to retain the uterus *in situ*.

Ergot of Rye as a means of inducing Premature Labour. By JAMES PATERSON, M. D.—(*London Medical Gazette*, 1st June 1839.)—Dr Paterson has related two interesting cases of the induction of premature labour by means of the ergot of rye. Deformity of the pelvis was the cause of this operation being required. In the first case half an ounce of the ergot of rye was infused in twenty-four ounces of boiling water, and two ounces of this exhibited every third hour. When this quantity was finished, two drachms more were infused, and administered at shorter intervals; so that altogether the patient took six drachms of the medicine. Labour soon came on, and thirty-nine hours and fifteen minutes from the first administration of the medicine she was delivered of a live child.

The second case required a larger quantity of the ergot, and a greater quantity of time before its specific effects were developed. In all, thirty-four drachms of the ergot of rye were administered; and the time elapsed from the first dose of the medicine till the expulsion of the child was five days, twenty hours, and twenty-five minutes. Both patients rapidly recovered.

Dr Paterson considers these cases are extremely interesting, as they appear to prove satisfactorily that the ergot of rye is of itself sufficient to bring on premature labour, without being followed by bad symptoms or inconvenience either to the mother or child.

Dr Ramsbotham, in the Gazette for June 15, mentions that in his hands this practice was followed by a greater mortality among the children than when the usual mode of inducing premature labour by puncturing the membranes was followed; and that in four instances, the children delivered by the aid of the ergot died of convulsions a few hours after birth. He attributes this to the deleterious properties of the ergot being conveyed to the infant, and acting injuriously on its tender organization, although it does not affect the mother; convulsive seizure being one of the prominent features of ergotism.

TOXICOLOGY AND TOXICOLOGICAL THERAPEUTICS.

On the propriety of colouring Arsenic to prevent mistakes.—(*Journal de Pharmacie*, August 1839.)—As it is impossible to proscribe the sale of arsenic on account of its various uses in medicine and the arts, different means have been suggested to prevent mistakes arising from confounding it with other white powders, or to put persons on their guard who are attempted to be poisoned with it. Various colouring matters were first thought of; but after a long and careful examination of all of these, M. Grimaud has satisfied himself that all the arsenic used in commerce or medicine should be mixed with a small proportion of the sulphate of iron and the cyanuret of potassium. The very small proportion of one in the hundred of each of these substances he found amply sufficient to mark the presence of arsenic in both solids or fluids by the peculiar colours which it gave to these. The peculiar aspect of the aliments with which arsenic should be mixed would at once, by exciting disgust, or calling the attention of the individual to them, tend to put the person attempted to be poisoned on his guard, and, in addition, assist materially in the judicial proof.

M. Grimaud has given a very instructive table showing the different colours produced by this medicated arsenic when mixed with various kinds of food. Thus, when this medicated arsenic is mixed with rich warm soup, or rich beef tea, it produces a greenish brownish colour; sorrel soup, watery green; cold grease, iron gray; cold milk, azure; warm milk, opal; cream, pistachio green; curdled milk, opal; coffee with milk, ash-gray; coffee with water, or warm tea, iron gray; lemonade, light blue; red wines, violet; white wines, light blue; eggs prepared for an omelette, dragon green; water, deep blue.

This plan proposed by M. Grimaud is so simple, and appears to answer the purpose intended so well, that it is to be hoped the attention of the Legislature will be directed to some such means in this country.

An Experimental Inquiry on the presence of Alcohol in the Brain. By Dr JOHN PERCY. 8vo. pp. 112. London, 1839.—A number of experiments are related by Dr Percy to prove the presence of alcohol in the substance of the brain after poisoning by that fluid. The plan he followed for the detection of the alcohol, was to cut the brain into slices, introduce it into a matrass, cover it with water, and commence distillation over an argand lamp. The vapour which rose was conducted by means of a bent glass tube into another tube of larger diameter, where it was condensed. The condensed fluid was then poured over some carbonate of potass in a test tube and the tube hermetically sealed; after brisk agitation it was allowed to subside, when any alcohol which was present floated on the top. To prove that this was alcohol, the extremity of a pipette was brought to touch the surface of the supernatant fluid, when, by capillary attraction, a small portion entered, and burned with a bluish flame when applied to a lighted candle. A drop of the same fluid was also deposited on a small fragment of camphor, when its solvent action on this substance, and subsequent evaporation, corroborated the first test.

Dogs were the animals experimented on, and in every instance in which death speedily took place from the effects of the alcohol poison, alcohol was detected in the brain. In two instances he had an opportunity of verifying these results on the human brain. In the one case, where death appeared to have taken place shortly after the taking of the ardent spirit, alcohol was detected in the brain. In the other cases, the patient lived three days after taking the ardent spirits, but no traces of alcohol could be detected either in the fluid of the ventricles or in the substance of the brain itself. This result corresponded with what he found took place with regard to dogs; for if the animal lived beyond a certain period of time after the administration of the alcoholic poison, none of that fluid could be detected in the substance of the brain. The alcoholic odour was not present in many of the cases, though the alcohol was found on chemical examination to be present in the substance of the brain.

On the presence of Arsenic in the Human Body. By M. ORFILA.—(*Annales d'Hygiène Publique*, October 1839.)—M. Couerbe, a chemist, some time ago announced that he had discovered the presence of arsenic in the animal tissues when in a state of putrefaction; and M. Orfila subsequently confirmed the same fact. M. Orfila has since then carried his investigations much further; and after a careful analysis of all the tissues of the body, both in a recent state, and also during their putrefaction, has distinctly proved that no traces of arsenic are to be detected in any tissue of the body, excepting in the bones; and in them it exists in very small quantity. He relates at length a number of his experiments undertaken with the view of determining this point; and the conclusions at which he has arrived are the following:—1. That arsenic exists in the bones. 2. That arsenic is not to be met with in the viscera, tested separately, by any method which is in use at this day for the discovery of that metal. 3. That none has yet been detected in the muscles. 4. That, with regard to poisoning by arsenic, it is always possible for an expert toxicologist to determine, that the arsenic obtained from the blood, from the viscera, or from the muscles upon which he is experimenting, is not that which exists naturally in the human body, but that it comes from an arsenical preparation introduced into the cavities of the body, or applied externally.

Poisoning with Arsenious Acid successfully treated by the Hydrated Peroxide of Iron.—(*American Journal of the Medical Sciences*, May 1839.)—A young lady, disappointed in love, resolved on suicide. She took a packet of arsenic containing two drachms, put it into a silver vessel, poured over it about two ounces of water, and drank the fluid contents. This was about midnight. She then went to bed; but finding death not approaching, she took some of the poison which remained at the bottom of the vessel, and endeavoured to push it down her throat, but its bitter taste, she said, made her spit out a part of it. She must, however, have taken about fifty-six grains of arsenious acid. At one in the morning, the first symptoms of poisoning manifested themselves by several attempts at vomiting, and by a feeling of burning heat in the throat and in the region of the stomach. It appeared that the patient had that day ate a hearty dinner, the digestion of which had not apparently been finished, as the vomiting brought up a portion of it, and probably also some of the poison. The pain soon became violent, followed by cramps in the calves of the legs.

Dr Deville saw the patient at four o'clock in the morning. She had vomited three or four times; she had intense frontal headach, and her face was much flushed; her eyes were greatly swollen, and filled with tears; and she complained of a feeling of suffocation, and also of acute burning pain in the throat and stomach. Her pulse was strong, full, and bounding. Dr Deville thought he had arrived too late to render effectual assistance, and gave only some milk and other drinks to aid the vomiting, and applied a poultice over the region of the stomach. The symptoms progressively increased in intensity, and Dr Delons was sent for, who proposed to give the hydrated tritoxide of iron. This medicine was procured by half-past five, five hours and a-half after the taking of the poison. It was given in ounce doses about every quarter of an hour, till eight o'clock, by which time nearly half a pound had been taken. It was then discontinued, as it had produced vomiting several times, and had purged twice, and as the symptoms appeared to be abating. She still, however, suffered from violent cramps, particularly in the left leg. The pulse still continued full and bounding; the pains in the epigastrium were at times insupportable, and then again almost disappeared. Twenty-five leeches were applied over the stomach, followed by cataplasms; and emollient injections were administered at intervals.

Feverish symptoms, with violent headach, continued for this and several succeeding days, preventing the patient from enjoying a moment's repose. The pain in the epigastric region, however, diminished under the use of warm baths and soothing treatment; and at the end of eleven days she had completely recovered.

Poisonous symptoms from the Bite of a Spider. By Dr Hulse.—(*American Journal of the Medical Sciences*, May 1839.)—On the 7th of August, a gentleman, when in the water-closet, received a bite from a spider on the penis. The pain, which was not great at the moment, continued to increase in severity till an hour afterwards, when it became so intense that Dr Hulse was sent for. The patient was found writhing under the most acute suffering, though the seat of the bite showed no marks of irritation or of swelling. Very shortly afterwards, violent vomiting came on, attended with deep-seated pain in the region of the abdomen, extending to the chest, and with occasional convulsive paroxysms of suffocation. The vessels of the face and neck were greatly distended, and of a dark hue. Blood was abstracted freely from the arm, and teaspoonful doses of laudanum and *aqua ammoniæ* were given every ten minutes, but almost immediately ejected from the stomach. Spasm of the muscles of the spine and of the extremities now came on, and the agony and anxiety were much increased. Tincture of cantharides, strong ammonia liniment, and spirits of turpentine were applied to every part of the body; and the ammonia and laudanum, with the addition of some tincture of camphor, were administered internally. Three hours after the accident, the paroxysms of pain came on at longer intervals, and the vomiting was less urgent, but the intensity of the pain during the paroxysm was undiminished. Frequent injections had been given, but it was not till five hours after the accident that feculent matters were passed. The patient became much easier in the course of the evening, and a dose of castor oil was retained on the stomach, which purged him freely. The pains in the legs, however, continued, and prevented sleep. Sinapisms were next day applied without relief. Veins in both feet were therefore opened, and blood was allowed to flow till an impression was made on the pulse. The pains left about an hour after this; he passed a quiet night and rapidly recovered.

The spiders in the water-closet were of a large size, of a dark-brown colour, and covered with hairs over the body and legs.

Uvularia perfoliata, an antidote for poisoned wounds. By B. H. COATES, M. D.—(*American Journal of Science*, Vol. xxxv. 1839.)—The *Uvularia perfoliata, Hieracium nervosum (venosum,)* and several other plants are in common use among the American Indians as antidotes to the poisonous symptoms produced by wounds inflicted by the poisonous snakes. Dr Coates relates in detail a case of the efficacy of the *Uvularia* applied topically to the wounds inflicted by a copper-head (*Trigonocephalus contortrix,*) one of the most poisonous of the American snakes. Immediately after the bite, which was situate about two inches above the instep, a ligature was applied firmly above the knee, and a quantity of the *Uvularia perfoliata* bruised with vinegar and salt, was applied over the seat of the bite. The wound, which was at first intensely painful, became soon after quite free from pain unless when touched. The limb was quite benumbed, and was enormously distended with œdematous swelling as high as the ligature; masses of effused blood were visible over the top of the foot and in several parts of the leg; the skin was white, shining, and cold. Suction was afterwards made over the bite for about half an hour with a tobacco pipe, and ammonia was administered internally. The ligature was continued for nearly thirty hours, when symptoms of threatening mortification of the limb caused it to be removed. The child, a girl about five years of age, was then freely purged, when the swelling rapidly abated, and three days afterwards she was running about as usual.

Dr Coates is of opinion that "death rarely, if ever, takes place from the direct effects of the bite in human adults. Thus, that which had been ascertained by Fontana with so much labour in regard to the viper, and rendered so probable by Russell, as to the *Cobra di capello*, and other Indian serpents, seems also to be established in regard to our rattlesnakes."

The rattlesnake has generally been regarded as one whose bite is most surely and rapidly fatal, and yet Dr Coates mentions that his friend, Dr M'Connell of Mauch Chunk, had attended no less than seventeen cases of bites of the rattlesnake, "not one of which had proved fatal;" and that "similar results were met with at Pottsville by Dr Halberstadt." Dr Holbrook's, (the author of the North American Herpetology,) opinion is, that "the poison of the rattlesnake is mortal to animals of the size of its prey, but rarely, if ever, to man." He states, however, he has known a bite prove fatal in two minutes, but in this case the fang was supposed to have penetrated a vein.

Dr Coates remarks, that the appropriate treatment is "a moderately tight ligature, and suction with some force for a prolonged period;" and he is of opinion it would be sufficient if these were continued for a period of six or seven hours. He thinks it would be right to make still further trials of antidotes, though the facts above related go far to explain the cause of the doubtful reputation of the various remedies for the bites of poisonous serpents.

MEDICAL POLICE AND STATISTICS.

Greater number of Still-born in Illegitimate than in Legitimate Births.—It is well known that unmarried females who become pregnant are much more likely to have still-born children than married women. Professor Jorg in his recent work "Die Zurechnungs fähigkeit der Schwangern und Gebärenden beleuchlet," states that in Leipsic in 1835, there were born 1131 legitimate and 249 illegitimate children; and of these 45 of the former, and 28 of the latter were still-born; the ratio being in legitimate births 1 still-born in nearly every 22 births, whilst in the illegitimate it was 1 still-born for a fraction more than every 13 births.

Value of the Signs of Death by Hanging. By M. Orfila.—(*Annales d'Hygiène Publique,* October 1839.)—M. Orfila, in consequence of the assertion of M. Devergie, that death by hanging could always be detected by the circumstance of spermatic animals being found in the urethra, and by the genital organs being congested with blood, made a number of experiments to determine this point. He found that in almost every dead body, no matter from what cause death resulted, spermatic animals were observable in the urethra; and in many cases they were found to be alive even six hours after death. In the living body, again, he detected spermatic animalcules in the first urine which was passed after seminal emission, although even twelve hours had elapsed between the seminal emission and the passing of the urine.

With regard to the congested state of the genital organs, which is alone produced, according to M. Devergie, when death results from hanging, M. Orfila found, that hanging up a dead body several hours after death would always to a greater or lesser extent produce this congestion. In one of the cases which he relates, the person had died of disease of the heart, and though the body was not hung up till five hours after death, the penis was by this change of posture increased in diameter by nine lines, and actually became so erected as to form a right angle with the body.

He concludes, therefore, that no faith can be put in the presence of spermatic animalculæ in the urethra, or in congestion of the genital organs, as signs of death by hanging.

Deaths by Poison in the Counties of England and Wales. (*Gateshead Observer, Saturday,* 2d November 1839.)—"Returns from the Coroners of England and Wales of all Inquisitions held by them during the years 1837 and 1838, in cases where death was found, by verdict of jury, to have been caused by Poison." This Report is fraught with deep and melancholy interest; and considering that the public may be benefited by an extended publication of its contents, the Gateshead Observer has reduced the Returns into a compact and popular shape.

The following table, compiled from the Report, will show the number of deaths by poison in each county, so far as the Returns supply the information.

Bedfordshire	3	Cambridgeshire	8
Berkshire	1	Isle of Ely	1
Buckinghamshire	3	North part of ditto	3
Brecon	1	Cambridge	2
			—14

Cheshire		16
Cornwall		4
Cumberland	2	
Carlisle	1	
		—3
Derbyshire	3	
Scarsdale	5	
High and Low Peak	2	
Derby	3	
		—13
Devonshire	6	
Exeter	3	
		—9
Dorsetshire		4
Durham :—		
Chester Ward	7	
Easington ditto	2	
Stockton ditto	1	
		—10
Essex	1	
Colchester	2	
		—3
Glamorganshire	1	
Gloucestershire	6	
Hampshire :—		
Hundred of Christchurch	1	
Isle of Wight	1	
Southampton	1	
Borough of Southampton	1	
Portsmouth	2	
		—6
Herefordshire	1	
Hereford	2	
		—3
Huntingdonshire:—		
The Hundred of Leightonstone	0	
Hurstingstone, including Huntingdon	2	
		—2
Kent	24	
Folkestone	1	
Maidstone	1	
Sandwich	1	
Tenterden	1	
		—28
Lancashire	18	
Hundred of Blackburn	1	
Manchester district	46	
Borough of Liverpool	21	
Wigan	2	
		—88
Leicestershire	12	
Leicester	6	
		—18
Lincolnshire	41	
Lincoln	3	
Grantham	2	
		—46

Middlesex	23	
Duchy of Lancaster	1	
London (and Southwark)	25	
Westminster	18	
		—67
Monmouthshire		3
Norfolk	11	
Norwich	6	
Yarmouth	1	
		—18
Northamptonshire	3	
Nassaburg	1	
		—4
Northumberland :—		
South Division		3
Nottinghamshire	13	
Nottingham	7	
		—20
Oxfordshire		1
Rutland		2
Shropshire		3
Somersetshire	6	
Bristol	1	
Bridgewater	1	
		—8
Staffordshire	6	
North Division	3	
Walsall	1	
		—10
Suffolk	5	
Ipswich	3	
Bury	2	
		—10
Surrey	20	
Duchy of Lancaster	1	
		—21
Sussex	3	
West Division	6	
		—9
Warwickshire	3	
Coventry	1	
		—4
Westmorland		2
Wiltshire		2
Worcestershire		4
Yorkshire	33	
North Riding	2	
Holderness	2	
Honour of Pontefract	1	
Howden and Howdenshire	3	
Langhaugh	1	
St Peter's Liberty	1	
Ripon	1	
Southcliffe with Ewecross	1	
Leeds	15	
Hull	7	
York	2	
Pontefract	1	
Scarborough	1	
		—70

We have here returns from 41 counties, and 31 boroughs. The omissions (many of them, at least) will be readily detected.

In our next table, we have classed the deaths under the various descriptions of poison by which they were caused:—

Arsenic		184
Taken by a girl, disappointed in love	1	
By a girl, in a fit of passion	1	
By a girl, in a fit of jealousy	1	
By a girl who had robbed her master's son	1	
By a girl, seduced and deserted by a married man	1	
By a girl, subject to fits and despondency	1	
By pregnant girls, to destroy themselves	5	
By a pregnant girl, to procure abortion	1	
By a pregnant girl, deserted by her lover, who was suspected to have procured her the poison	1	
By a pregnant girl—how or by whom administered not known	1	
By a wife, separated from her husband	1	
By a young woman, married unhappily, and separated from her husband	1	
By a cook maid, distressed by the death of a friend	1	
By an insane mother and two children—administered by the former	3	
By five children, to whom it was administered by an insane mother	5	
By a man, embarrassed by debt, and disordered in mind and body	1	
By men, through reduced circumstances, pecuniary embarrassments, &c.	6	
Taken through drunkenness	12	
By a farmer and innkeeper, who, having had a handsome legacy left to him, spent it in riotous living—got into debt—and took poison to escape his creditors	1	
Through poverty	3	
Through despondency	1	
In lunacy	52	
In food, by accident	7	
In mistake, by young people, in food prepared for vermin	5	
In mistake, by a married woman, who, having mixed it with oatmeal for vermin, was innocently supplied by her husband with food prepared from the mixture	1	
By accident, the deceased having tobacco and arsenic loose in the same pocket	1	
In mistake for cream of sulphur	1	
Administered to a child in mistake for magnesia	1	
———————— Queen's cordial	1	
Taken inadvertently, in various ways	3	
Administered wilfully	5	
How administered not known	2	
Felo de se	20	
Taken without cause assigned in the Report	36	
Opium		42
Overdose, taken by adults in ignorance	11	
Overdose, administered to children by mothers and nurses	8	
Administered to a child in mistake for other medicine	1	
Supplied by a deaf druggist for manna, and administered to a child by an ignorant nurse	1	
Administered to a child, found dead in the Trent, extensively bruised, (the poison and the wounds both sufficient to account for death)	1	

Taken by a child in ignorance	1	
Taken through drunkenness	2	
Through lunacy	9	
How administered not known	1	
Felo de se	2	
Taken without cause assigned, &c.	5	
Laudanum		133
Administered by mistake	2	
——————— for antimonial wine	1	
——————— for paregoric	2	
——————— for Godfrey's cordial	2	
——————— for syrup of buckthorn	1	
——————— for tincture of rhubarb	4	
Sold at a druggist's for antimonial wine—the druggist not bred to his trade, and kept two shop-girls, one of whom (the coroner ascertained) gave twice as much laudanum for a penny as the other	1	
Taken by adults as medicine	11	
An overdose, taken by a drunken surgeon	1	
Taken by mistake for a surgeon's draught	1	
Administered to children in mistake	2	
Drunk by a child, within whose reach the phial had been left	1	
Given by a child to an infant, to allay coughing, in the mother's absence	1	
Overdose to infants by mothers and nurses	26	
Taken inadvertently	7	
Through despondency	4	
Through drunkenness	9	
Through dissolute conduct	1	
Through lunacy, induced by want	2	
Through lunacy from various causes	30	
Through loss of situation	1	
Wilfully administered	2	
How administered not known	3	
Felo de se	4	
No cause assigned, &c.	14	
Cough Syrup		1
Overdose, given by a mother to her child	1	
Syrup of Poppies		5
Overdose, administered to children by mothers and nurses	5	
Godfrey's Cordial		12
Overdose, administered to children by mothers and nurses	10	
Administered to children by mistake for syrup of rhubarb	2	
Infant's Mixture (most probably a preparation of Opium)		1
Overdose, given by a mother to her child	1	
Morrison's Pills		1
Taken as medicine	1	
Tartar Emetic		2
Three drachms, taken to cure the ague	1	
Overdose, given to an infant	1	
Colchicum		3
Overdose, taken for the gout	1	
Taken as medicine	2	
Mixture for Vermin		2
Taken by children, within whose reach it was left	2	
Hellebore		1
Taken by a "Temporary lunatic"	1	

Mercury		2
Taken by a "Temporary lunatic"	1	
Felo de se	1	
Bichromate of Potass		1
Eaten ignorantly by a child	1	
Aquafortis		2
Drunk by a child, within whose reach it was left	1	
Taken in temporary lunacy	1	
Oxalic acid		19
Taken by a woman, who had quarrelled with her husband	1	
By a person of defective intellect	1	
Through lunacy	8	
Through drunkenness	1	
Through want of employment	1	
By a young woman, on the emigration of her brother	1	
By a child, within whose reach it was left	1	
Without cause assigned	5	
☞ It is singular, that nearly the whole of the cases of poisoning by oxalic acid occurred in Middlesex.		
Nitrate of Silver		1
By a child (swallowed percussion caps)	1	
Castor-oil Seeds		1
Taken inadvertently	1	
Fungus		4
Eaten for mushrooms	4	
Rum		1
Ignorantly given to a child for inflammation of the bowels	1	
Extract of Lead		1
Found in solution by a woman, and given to her child in mistake for ginger-wine	1	
Essential Oil of Almonds		4
Taken in lunacy	2	
Without cause assigned	2	
Prussic Acid and Arsenic		1
Taken in lunacy	1	
Arsenious Acid		1
Taken in mistake for a purging powder	1	
Acetate of Morphine		2
Administered in mistake for other medicine	2	
Strychnine (the active principle of Nux Vomica)		2
Taken by a child, to whose father it had been sent as a medicine	1	
Lunacy	1	
Nux Vomica		3
Taken in ignorance of its effects	1	
Procured by a girl of weak intellect, and given to her father, who had sent her for an emetic	1	
Taken without cause assigned	1	
Wolfsbane		1
Eaten by a child, who found it in his father's garden	1	
Black Ashes		1
Procured for washing, and eaten by a child	1	
Sulphate of Iron (Copperas)		1
Taken to procure abortion	1	
A Vegetable Poison		3
Taken by two children (brothers)	2	
By an adult	1	

Hierapicra		1
An overdose, taken in gin	1	
Monk'shood		1
Gathered by a poor old man, and eaten in mistake for celery	1	
Savine		1
Taken to procure abortion	1	
Infusion of Hemlock		1
Overdose, taken by a woman	1	
Laudanum and Prussic Acid		1
A case of lunacy	1	
Potash		1
Taken by a child	1	
Medicine		1
Administered to an infant—intended for an adult	1	
Muriate of Tin		1
Taken by a child in mistake for vinegar	1	
Cantharides		1
An embrocation, containing tincture of cantharides, administered to a child in mistake	1	
Laudanum and Aquafortis		1
Lunacy	1	
Carburetted Hydrogen Gas		2
Inhaled during sleep, through an accidental escape of gas	2	
Belladonna (Deadly Nightshade)		2
Taken by mistake	1	
Without cause assigned	1	
Paregoric Elixir		2
Overdose, administered to children	2	
Decoction (nature not exactly known)		1
Taken by a pregnant girl, with the supposed intention to procure abortion	1	
Nitrous Acid, with Aloes		1
Taken without cause assigned	1	
Cayenne Pepper, &c.		1
Cayenne pepper, essential oil of Cayenne, and bark, taken in alcohol, as a remedy for the ague	1	
Turbith Mineral		1
Taken in mistake	1	
Sulphuric Acid (Vitriol)		32
Swallowed by children, ignorantly	9	
———— for ginger-beer	3	
Administered to children, for Godfrey's cordial	4	
——— to a child, for castor-oil	1	
———— for syrup of rhubarb	1	
———— for some medicine not named	1	
Accidentally sold for Godfrey's cordial, and given as such to a child	1	
In a drunken fit	1	
Through insanity	5	
Through family quarrels	1	
By a woman, who thought herself forsaken by God	1	
Without cause assigned	4	
Hydrocyanic (Prussic) Acid		27
Taken by surgeons, depressed in mind by reduced circumstances	3	
By a surgeon, delirious from scarlet fever	1	
By a surgeon, addicted to drinking	1	
By a surgeon, in a fit of frenzy	1	

By druggists, deranged	2	
By a medical student, affected by over-study	1	
By a child, in ignorance	1	
By a gentleman, reduced from affluence to poverty, and deranged	1	
Through disappointment in love	1	
Through lunacy	9	
Without cause assigned	6	
Corrosive Sublimate		12
Taken incautiously as medicine	1	
By mistake, for cider	1	
In a fit of passion	1	
Through despondency	1	
Through lunacy	5	
Felo de se	2	
Without cause assigned	1	
Poisons not specified		14
Taken accidentally	2	
By a drunkard, in mistake	1	
Case of miscarriage, the mother having received some noxious drug	1	
Taken without cause assigned	2	
Through lunacy	7	
How administered not known	1	
		543

The total number of deaths by poison, in 1837 and 1838, it will be seen, was 543. Of these, 261 were females; 282 males.

The total number of individuals poisoned by opium, or its preparations, was 186.

The deaths of very young children (most of them at the breast,) from opium, or its preparations, administered by mothers and nurses, in ignorance of the powerful effects of these substances on infants, were 52.

The deaths of young children from opium or laudanum, administered in mistake for other medicine, were 20. In 11 of these cases, the names of the medicines are given, in the place of which opiates were given by mistake.

The very great number of deaths amongst children, resulting from overdoses of opium, or its preparations, and from doses thereof given in mistake for other medicines, cannot fall to excite attention. Deaths of this kind amount nearly to a seventh of the entire number of deaths by poison. The number was 72.

Most of the children poisoned in this way, *lost their lives* owing to the ignorance, carelessness, or presumption of *their mothers.* It cannot be too generally known, that narcotic, and anodyne drugs, powerful though they be in the adult, act with infinitely greater energy upon the more sensitive nervous system of the infant: so that even experienced medical men never administer remedies of this class to the very young, without exerting the utmost caution, and making the most accurate calculation. Two drops of laudanum have been known to kill an infant. Nay, we have heard of a case in which *one* drop stole away the life of a new-born babe. It is evident that the practical inference to be deduced from the facts represented in the above table is—*that mothers and nurses should never dare to administer medicines of the narcotic kind, except under the immediate direction of the medical attendant.*

The Coroner of Nottingham states, that "Godfrey's Cordial is given to children to a great extent; and that he has no doubt whatever, that many infants are yearly destroyed in that borough, but who, dying off gradually, never come under his notice officially." There can be no doubt of the truth of this assertion. At all events, we can say positively that such instances occur elsewhere.

It will be observed, that of the 20 cases in which death resulted from the administering of opium or laudanum by mistake, 11 were instances in which they were given instead of substances more or less resembling them in colour. No details of the mistakes are given in the remaining 9.

In recording one of the 11 cases, Mr Browne, the Nottingham Coroner, (who has very commendably entered more into detail than most of the other Coroners,) says:—"There appeared very great negligence on the part of the person who sold the laudanum. He had not been brought up as a druggist, but had latterly taken to the business, and employed two young girls to attend his shop, and sell drugs in his absence. I ascertained personally, at the shop, that one of them sold twice as much for a penny as the other."

In 10 of the 11 cases, although the medicines are named instead of which laudanum was administered, we are not told whether the mistake was made by the mother, the medical attendant, or the dispenser.

We find in the Returns 4 cases of the administration of savine and other poisonous drugs, with the view of procuring abortion. In 3 of these cases, the mother perished undelivered. In the fourth, the child perished.

The crime of fœticide would not be so often attempted, if the real effects of savine, and the other drugs made use of, were properly understood. These agents never can induce abortion without placing the woman's life in the greatest danger; and a very frequent result is, that she dies undelivered, having previously suffered the intensest agony.

In 8 cases, poison was taken for the purpose of self-destruction, by young women who had been seduced, and were pregnant. Arsenic was the poison made use of in all these instances. It is probable, that besides these 8 cases, several other of the numerous instances of poisoning by arsenic had been the result of seduction:—but this is not stated in the Returns.

The deaths of eight surgeons are entered; and it is a curious circumstance, that all of these had taken prussic acid. One had taken it with arsenic. Three committed self-destruction in consequence of pecuniary difficulties—one during the delirium of scarlet fever—one during the delirium of mania *a potu*—three during insanity. No instances of poisoning among members of the other learned professions ars stated. Perhaps this may be owing to an omission in the Returns—but we are rather inclined to consider that they are not defective on this point.

Do not these facts furnish medical men with materials for melancholy reflection? Eight of their brethren have, within a short period, destroyed themselves; whilst no other profession is named in the tables. Three of these, indubitably, were urged to the rash act by embarrassments; and four committed suicide in insanity, which was probably induced by long-continued anxiety and disappointment. In one case only—that of insanity following scarlet fever—could different and natural causes be assigned. May not these instances of self-destruction be deemed indications of an overstocked and ill-regulated profession?

These important Returns would furnish us with the means of extending our remarks to a much greater length, but we must, for the present at least, forbear. We cannot, however, conclude, without expressing our approval of a valuable suggestion made by Mr Frampton, Coroner for Dorsetshire. This gentleman thinks there should be some way of compelling those who sell poison, to register the day and the hour of sale, and the name of the purchaser. Mr Frampton justly observes, that from a want of such compulsory registration, the ends of justice are frequently frustrated.

Great credit is due to Sir Robert Inglis for having called for these Returns. They would, however, be much more useful to medical and political science, had information been required as to the profession, trade, or station in life of each individual; and if it had also been stated (whenever possible) how the poison had been procured—whether from a druggist, a surgeon, or otherwise—the quantity sold, the age of the dispenser, and whether any precautions had been taken by him to prevent mistakes.

MISCELLANEOUS.

Report of the Proceedings of the Scientific Meeting held at Pisa in October 1839. By GEORGE STEWART NEWBIGGING, M. D., F. R. C. S. E, &c. in a Letter to the Editor.—Having been at Pisa during the late meeting of the Italian Scientific Association, I shall give you such short details of its proceedings as I think will interest you. A full account of its transactions will, I believe, be published by and by; but, as some time may elapse before that be ready for circulation, you may, perhaps, in the meantime, be pleased to have such notice of them as I, a bird of passage in Italy, have been able to glean.

The institution of this Association is, it is said, mainly to be attributed to the exertions of the Prince of Musignano, (son of Lucien Bonaparte, Prince of Canino,) who is devoted to the science of zoology, and reported to have a fine collection of natural history. He, it seems, attended the Freyburg meeting of 1838, and, judging from the good effects of such reunions in Germany, that a similar one in Italy might be beneficial to science, he set about its establishment, and was fortunately seconded in his views by the liberal encouragement which he met with on the part of the Grand Duke of Tuscany. It has, however, as was to be expected in this country, met with some opposition in certain quarters, but that has been of limited amount, and, with the exception of Modena, Naples, and the Papal dominions, the meeting was attended by professors, delegates and others, from all the Italian states, making up the number of 421, foreigners and natives included. Of strangers there were not many, and, with the exception of Professor Oken of Zurich, Professor Audouin of Paris, and one or two more, none of any great celebrity attended from other countries, so that the meeting was essentially what, on our admission cards, it professed to be:—" La prima Riunione de Naturalisti, Medici, ed Altri Scienyiati Italiani tenuta in Pisa nell' Ottobre 1839,"—the first meeting of Naturalists, Physicians, and other scientific Italians, held in Pisa in October 1839. The muster of these was numerous, among whom were many of at least an Italian reputation; but as the enumeration of them would be an unnecessarily tedious detail, we shall consign them to an honourable silence, except in so far as allusion is made to them in connection with the transactions of the meeting.

The first assembling of the members took place on the 1st October, after having previously in a body attended high mass, celebrated in the magnificent old Cathedral. This meeting was, of course, merely of a general and introductory nature, at which the general President and Secretary were named,—the former, Dr Gerbi, Professor of Mechanical Philosophy, and the latter, Signor Filippo Corridi, Professor of Geometry and Trigonometry, both of the University of Pisa. Temporary presidents for each section were then appointed, under whose auspices these met next day, 2d October, in their respective localities, and proceeded to elect by vote the individuals who were to conduct their proceedings during the session of the Association.

The following is a list of the sections into which the members divided themselves, with the names of the different Presidents and Secretaries:—

Medicine.

President—Giacomo Tommasini, Professor of Clinical Medicine at Parma.

Secretary—Francesco Puccinotti, Professor of Medical Jurisprudence at Pisa.

Chemistry, Mechanics, and the Mathematical Sciences.

President—Pietro Configliachi, Professor of Mechanical Philosophy at Pavia.

Secretaries—Luigi Pacinotti, Professor of Experimental Mechanics at Pisa, who took charge of the Chemical and Physical Departments of this Section.

Vincenzo Amici, Professor of Astronomy at Florence, who superintended the Mathematical and Astronomical subdivision.

Agriculture and Tecnologia.

President—The Marquis of Ridolfi,[*] having for

Vice-President—Giuseppe Gazzeri, Professor of Chemistry at Florence.

Secretary—Francesco Gera of Brescia.

Zoology and Comparative Anatomy.

President—The Prince of Musignano.

Vice-President—Giacinto Carena, Secretary of the Royal Academy at Turin.

Secretary—Giuseppe Gene, Professor of Zoology at Turin.

Botany and Vegetable Physiology.

President—Gaetano Savi, Professor of Botany at Pisa.

Vice-President—Giuseppe Moretti, Professor of Botany, and Rector of the University of Pavia.

Secretaries—Bartolommeo Biasoletto of Dignano, superintending the Botanical subdivision.

Fillippo Narducci, Professor of Botany at Marerata, that of Vegetable Physiology.

Geology, Mineralogy, and Geography.

President—Angelo Sismonda, Professor of Mineralogy at Turin.

Secretary—Ludovico Pasini of Vicenza.

The election of the preceding presidents constituted the sectional proceedings of the second day; after which, as a kind of gala, the inauguration took place of a statue[†] of Galileo, lately put up in the court of the university. This ceremony consisted in a chorus, singing several songs composed for the occasion, and in the delivery of an appropriate and very eloquent oration by Signor Giovanni Rosini;[‡] the intervals being beguiled by two bands of music, which from time to time relieved each other. As the day was one of Italy's own, bright and smiling, and the attendance numerous, with a reasonable sprinkling of the fair sex, the whole was a very gay and interesting scene.

This summed up the doings of the second day.

On the third there was a general meeting, at which, besides the members themselves, many ladies and strangers were present, whom curiosity or love of science had brought together. At this the general president read his address; and it was not till the fourth day of the Congress that its real business, so to speak, commenced in its different sections.

The first meeting of the medical section, of whose proceedings I propose giving you a few particulars, was opened by an address from its President, Professor Tommasini, in which, among other topics, he set forth the advantages of correct observation and strict deduction in the science of medicine, and enlarging on the benefit of such assemblies as the present among medical men,—concluded by expressing his best wishes for the progress of science, and for the future continuance and welfare of such associations.

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[*] The Marquis of Ridolfi is well known in Italy as the possessor of the property of Meleto, situated between Florence and Siena, where he has established a school for Agriculture, and where are held the annual meetings of the Tuscan Agricultural Society.

[†] By Demi, an artist of Florence.

[‡] Author of various literary works, among which are some comedies; the historical novels of Luisa Strozzi and La Monaca di Monya; and a history of painting in Italy, in which he is now engaged.

It is unnecessary to detail the transactions of this section in chronological order from day to day, and I therefore adopt the more simple arrangement of dividing into two categories, the most important communications made at the different meetings, noticing shortly as I proceed any interesting discussion to which they gave rise. These may accordingly be divided into, 1. Those relating to personal observations or experiments; and, 2. Memoirs read to the section.

And now for the first class, namely, Personal Observations or Experiments.

Dr Corneliani, Professor of Clinical Medicine at Pavia, and *Dr Polli*, Chemist of Milan, read papers on Diabetes, the one giving his observations on the history and nature of that disease, while the other detailed the result of his analysis of the chyme formed in the stomach of diabetic patients.

Dr Corneliani's views may thus be briefly summed up. He considers that the essential conditions of diabetes consist in an abnormal state of the stomach, during which sugar is eliminated in this viscus and not in the kidneys; that the use of creosote is highly useful in this affection, in order to remove the deranged condition of innervation of the stomach, to fix the albumen in the blood, and prevent the failure of nutrition; that the contemporaneous use of an animal diet is also necessary, in order to restore the homogeneous materials to the peculiar assimilating power of the diseased organ.

Dr Polli viewed diabetes as in no case having its seat in the kidneys, but as being always an affection of the stomach. This, according to him, consists not in inflammation, nor in irritation, nor in weakness of that organ, but is a deviation from its physiological state, which may be more properly regarded as a gastric neurosis of some specific character. He was of opinion, that where inflammation, congestion, or other such conditions of the stomach present themselves in the course of this disease, they ought to be viewed as its consequences or accidental concomitants. He thus concluded, from numerous analyses which he has made of the chyme, that diabetes is a specific affection of the stomach, which he calls an abnormal process of saccharification.

Dr Taddei, Professor of Pharmacology at Florence, read a memoir on the colouring matter, or Hæmatosine, of the Blood. After alluding to the uncertainty which even at this day prevailed in regard to much of our chemical knowledge of this fluid, he adverted to the want of accurate information regarding the true nature of hæmatosine,—some of the best organic chemists, and Berzelius among the rest, having gone the length of asserting, that if hæmatosine could be at all distinguished from albumen, it was so only by its greater coagulability; asserting at the same time, (having regard to the manner in which they were both acted on by chemical reagents,) that the one was a mere modification of the other. Professor Taddei considered the hæmatosine or colouring matter to be essentially different from the albumen, and if down to the present day they have appeared similar, it is because the former has never been obtained pure, but has had its properties always concealed or masked by the albumen with which it is constantly found combined.

Though it be difficult to obtain it pure, yet Dr Taddei conceives he has discovered a method by which the hæmatosine may be procured free from any admixture. This process he calls that of Interposition (Interposizione,) because in making use of a strong acid, as the sulphuric, he moderates its too energetic action by interposing various substances; first carbonate of soda, and then sulphate of copper, among the molecules of the colouring matter, and those of the albumen, and thus succeeds in so separating these as to be able to dissolve the hæmatosine with alcohol, and leave the albumen in the form of a matter presenting the appearance of the soft of bread.

Hæmatosine thus procured presents very different characters from those which have been usually assigned to it. It has been generally pronounced coagulable by heat, and soluble by water;* but, on the contrary, Dr Taddei finds the substance procured by his process to be *not* coagulable by heat, nor acids, nor alcohol. It is insoluble in water, but soluble in alcohol and in ether, and, above all, in alcohol acidulated by nitric acid; it is also soluble in alkalis, in which it becomes of a deep-green colour, not unlike that of the bile. It always appears red when seen by a refracted light. It combines readily with various salts, and is precipitated with them from the different solutions; it has a strong affinity for albumen and other coagulable matters, from which it is almost inseparable after combination. It is deprived of colour by carbon; it shows the iron, which it contains in abundance, after having been treated by chlorine; but if it be dissolved by potassa or soda, the chlorine no longer succeeds in showing or rendering the iron soluble, that being retained by the same hæmatosine which is now precipitated white instead of red.

The pure hæmatosine has a colouring property of considerable strength, and is in very small proportion when compared with the other elements of the blood.

Dr Taddei added, that he first made known his process in 1836, in his public course of pharmacology at Florence. He is aware that Mons. Lecanu presented a thesis to the Faculty of Medicine of Paris in the end of 1837, where he showed a new process of obtaining the colouring matter of the blood, which is not, however, based on *Interposition*, although sulphuric acid be employed. The hæmatosine of Lecanu, moreover, did not present all the properties of that which Dr Taddei procured by his process.

Dr Federici of Messina presented to the section some observations on the nature and causes of Dry Gangrene, in which he advanced the hypothesis of its proximate cause being an antiperistaltic movement of the capillary arteries, founding his views on some experiments which he had made on worms and frogs, in which the administration of spurred rye had produced a retrograde motion of the blood.

Dr Linoli of Tuscany read a paper, in which he attempted to prove that inflammation has nothing to do in the reproduction of organized parts, illustrating his arguments by observations made on the union of bone after fractures. He thought that all depends on the transudation of fibrine from the capillaries, and its subsequent consolidation; that there is never a new product formed; but that all takes place at the expense of the fractured bones, during which they themselves are always reduced in bulk near the point of fracture.

On this question, Dr Betti, surgeon to the Hospital at Florence, was of a different opinion. He could prove by anatomical preparations in the Florntine Museum, that there was a true reproduction of bone in the case of the extremities, where the fractured parts were in apposition, but he thought that there was no reproduction in those cases of fracture of the cranium, where there was much loss of substance. Dr Corneliani of Pavia maintained with less limitation than Dr Betti, that reproduction of bone takes place in fracture of bones of the cranium, basing his views on pathological specimens to be seen in the Museum of Pavia.

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* Despretz, Engelhart, Thenard, Guy-Lussac, Berzelius.

Dr Giulj, Professor of Natural History and Botany at Siena, and Physician at the Baths of Monte Cateni, (not far from Florence,) communicated the result of a series of observations which he had made on the electrical state of different organs of individuals employing these* mineral waters. He has found on applying the electrometer over the region of the liver, for example, that it has indicated a state of electricity after the use of the waters, different from what it did before their employment.

This notice gave rise to some remarks from Professor Puccinotti, who entered at some length, into the consideration of the actual state of science in regard to the application of electricity to physiology and pathology. He endeavoured to show that all the observations hitherto made were deficient in one very important point, namely, the demonstration of an electrical current in the nerves and muscles of hot blooded animals. With regard to the observations of Dr Giulj, they did not appear to prove any thing at all, because the application of silver plates on the different regions of the body, in connection with the conductors of the galvanometer, could only tend to show the state of the skin's electricity, and could in no way indicate that of an organ within the chest or abdomen. In conclusion, he expressed his conviction that the chemical and physical sciences were now a-days in a better condition than at any former period, for furnishing useful lights to the science of medicine; but that he who would employ them must know how to avail himself of these auxiliary sciences, being duly acquainted with what they are capable of doing, and not claiming for them powers, their possession of which is not yet established.

Dr Comandoli made some remarks on affections almost all of an inflammatory character, which were in his opinion calculated to show the importance of the principles on which is founded the system of Italian pathology.

Dr Pacini of Pistoja showed on a dead body the existence of certain small ovular bodies attached to the subcutaneous branches of the nerves of the palm of the hand, of which he considered himself the discoverer, and which he thought are probably connected with the sense of touch.

Dr Schinas, Professor of Clinical Medicine at Malta, read a memoir on Dysentery, with observations on the specific action of calomel on that affection, given in large doses of half a drachm.

Some remarks were made on this subject by Professor Tommasini and Dr Del Chiappa, Professor of Clinical Medicine at Pavia, both of whom brought forward cases illustrative of the good effects of such a mode of treating dysentery.

Dr Schinas also made some remarks on Tetanus, whose pathology he considers to be an inflammation of the spinal marrow,—a view which he has been led to take from the observation of twelve cases. In support of his opinion, he showed some drawings to the meeting, illustrating the engorgement of the vessels of the spinal marrow, as taken from patients who had died of tetanus.

Dr Pecchioli, Professor of Clinical Surgery at Siena, gave some statistics in regard to the cases of stone in the bladder, which have occurred in his practice at the hospital of that town.† He has had 72 cases, 11 of which, not operated upon, were dismissed relieved; 2 of them (women) having passed the calculi spontaneously. Of the 61 remaining, 58 were men, and 3 women; and of these, 47 were operated upon by cystotomy, and 14 by lithotrity. His proportion of deaths has been somewhat less than six per cent.

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* The salts with which they are impregnated, besides iron, are chiefly muriate of soda, carbonate of magnesia, and lime.

† This table was not very minutely drawn up, and afforded no results of any importance.

ELECTRO-VITAL CURRENT.	CURRENT OBTAINED FROM PARTS POSSESSING DIFFERENT CHEMICAL PROPERTIES.	CURRENT OBTAINED AFTER DEATH FROM DIFFERENT ORGANIZED PARTS.
1. Cannot be obtained by sinking wires into the animal experimented on, nor by the simple application of plates of metal to its organs	1. Is obtained by simple contact, on placing plates on the membranes, or the surface of the organs.	1. Can be obtained, but not constantly, and always weak, on applying the conductors in any way to different parts of the body.
2. Is strong, and manifests itself promptly, causing at the same time a violent reaction in the living animal.	2. The manifestation of the current is not accompanied by any reaction on the part of the animal during life or after death.	2. If the parts be not moistened by some decidedly alkaline or acid matter, the current is at first scarcely appreciable, sometimes not detected at all, and sometimes of a strength indicated by not more than 2 or 3 degrees of the galvanometer.
3. Is materially weakened if the anatomical proceedings be not adroitly performed, or the animal lose much blood in the course of them.	3. Is not influenced or weakened by the anatomical proceedings, as may be seen in the experiment of forming the communication between the stomach and gall-bladder during life.	3. Is somewhat increased by bringing a larger portion of the blades in contact with the parts of the animal to which they are applied.
4. It has an energy bearing some relation to the struggles of the animal.	4. Its energy is always the same, bearing no relation to the struggles made by the animal.	4. It is also increased by lessening the space which intervenes between the points of insertion of the two blades.
5. According as the instantaneous struggle of the animal is stronger, so is the great energy of the current on the first plunging of the lancets.	5. Its energy is nearly the same, whether the first time that contact is made, or in succeeding trials.	5. If the intervening space between the conductors be increased, the current becomes weaker, and at last dies away entirely.
6. Its energy decreases and becomes extinct, as nervo-muscular life fades and dies.	6. It appears to have no dependence on the vigour of life, but may be rendered weaker by wiping or washing the surface (*e. g.* the mucous membrane of the stomach,) to which the blades are applied.	6. The current becomes stronger as the *post mortem* changes progress, but is always notably weaker, even at its maximum, before putrefaction, than the other two currents.
7. The current is always in the same direction.	7. Its direction is variable, according to the different electrical states of the parts to which the conductors are applied, and if the relative position of these be changed, the current is also inverted.	7. The direction of the current is variable, and inverted as the conductors are inverted.

Some experiments* were shown at a meeting of this section by Professors Puccinotti and Pacinotti, which were also repeated at the section of Chemistry and Physics, tending to show the existence of an electro-vital current in hot-blooded animals. Professor Puccinotti having found a mode of deriving it from the nervo-muscular system. By this method he has rendered it appreciable by the electrometer of Nobili to the extent of 60°, and upon one occasion as high as 90° of that of Melloni. His manner of proceeding consists in simultaneously inserting the lancet-shaped blades of platinum (which communicate with the galvanometer in the usual way,) one into the brain, and the other into a muscle of the extremities of the animal on which he experiments, as, for example, a cat, a rabbit, or a pigeon. By means of this instantaneous plunging of both lancets into an animal whose physiological condition is sound, a strong reaction takes place, during which the current leaves its natural conductors, and attaches itself to the metallic ones. This current presents characters analogous to the physiological changes of the animal itself, and may be distinguished from other currents demonstrable in the subject of experiment, with which it might at first view be considered identical. Thus, Professor Puccinotti demonstrates what he considers an electro-chemical current by cutting open the abdomen of the animal during life, when, having exposed the cavity of the stomach, he applies one of the platinum blades to its mucous membrane, while, at the same time raising the liver against the diaphragm, he applies the other blade to the gall-bladder, calculating that he has thus obtained two surfaces in different states of electricity; the stomach more or less bedewed with gastric juice, being acid, while the gall-bladder is more or less alkaline. In this way a current of electricity is manifested by the galvanometer, which is stronger than the electro-vital, and appears to obey different laws. He also obtains another current after the death of the animal, which he considers different from the two preceding. Immediately after decapitation he introduces one blade into the neck, and the other at the same instant into one of the extremities of the animal experimented on when a current of electricity is detected, which is much weaker than either of the preceding, and is apparently subservient to different laws. To show in what consist these differences, according to Dr Puccinotti, the tabular view of them, in the preceding page, is given nearly in the Professor's own words.

In this first category of observations, should be mentioned the memoirs laid before the section relative to orthopedy.

Dr Pravay of Lyons, an individual who cultivates this branch of surgery with great zeal and reported success, brought forward his views in regard to the curability of congenital luxations of the head of the femur, which had long been considered in France as incapable of effectual permanent reduction. He considered such deformities as within the reach of surgery, but that much patience and time is necessary in order to secure success, of which he gave an example in a case where he had effected permanent reduction, after a duration of treatment to the extent of seven months. At first, the case was most discouraging and obstinate, as the head of the femur, for several days consecutively, jerked upwards and backwards on the dorsum of the ilium every time it was brought down to its normal position.

Dr Scalvanti of Pisa read an account of some successful cases of cure of club-foot, showing at the same time the apparatus he had employed, and in some cases without section of the tendons.

A mummy was shown to the section by *Dr Pacini* of Lucca, which was in a state of good preservation, though prepared five years ago. The mode he adopted was that of Tranchina of Sicily.

Dr Comi of Rome showed some preparations of animal matter which he had reduced to a state of stony solidification, preserving at the same time the original form of the parts so prepared. He supposed his process to be the same as that adopted by Segata.

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* A report of these was directed to be printed.

The second class of the proceedings of this section, according to the arrangement adopted, was composed of written dissertations.

Dr Giacomini, Professor of Clinical Medicine at Padua, read a paper on the nature and vitality of the Human Blood, in which, after having commented on the uncertainty of all chemical and physical examinations of its nature, he concluded that it is a homogeneous fluid, and that its vitality depends upon the solids. He thought also that its alterations are never spontaneous or primary, but are merely symptoms, the production of which must be looked for in the primary alterations of the solids.

Dr Bufalini, Professor of Clinical Medicine at Florence, in reference to this paper observed, that whatever might be the unsatisfactory character of the chemical and physical researches into the nature of the blood, they by no means excluded the possibility of finding, by their aid, some principle constituting the primary alteration of this fluid, and being thus the spontaneous cause of disease—that the facility with which the blood becomes altered in its properties is itself a proof of the susceptibility of this fluid to morbific causes. Professor Bufalini thought there could be no doubt that some diseases are of humoral origin—that the animal economy ought to be regarded as subject to the influence of dynamic and chemical actions—and that the primary seat of a disease should not be sought by having recourse to the principle of vitality alone, but also in the analogies which the chemical and physical sciences furnish to medicine.

Dr Turchetti read some considerations on the bad moral condition of the Medici di Condotta of Italy.

These are a class of medical men, who are appointed and paid by the village or community in which they practise, receiving from it an annual income for their trouble, but not entitled to demand remuneration from individuals.

Dr Morelli, Professor of Clinical Medicine at Pisa, read some remarks on the value of the physiological works of Professor Forni of Turin, which he thought were not so extensively known or so highly appreciated as they deserved to be.

Dr Ferrario, of Milan, read a paper on the utility and necessity for the interests of medical science of some arrangement in every hospital, whereby the value of the different pathological systems might be fairly tested, and for this purpose suggested that a statistical report might be made, containing the respective pathological, therapeutic, and clinical observations made in each ward. For example, a clinical ward might be allotted in every hospital for the patients of those individuals upholding inflammation as the cause of all disease, another for the "Mistionists;" and so on, with regard to every system worthy of investigation—that of homœopathy being excluded by the undivided verdict of the meeting. Dr Ferrario showed a programme of such a statistical table as he suggested might be adopted in all the hospitals of Italy.

This communication was followed by some observations of pathological and clinical interest, as to the construction of the most useful form of a table of medical statistics for Italian hospitals, in which Drs Bufalini and Ferrario took part.

Dr Fassetta, Physician to the Civil Hospital of Venice, brought forward some observations on the combination of the moral with the medical treatment of insane patients; presenting at the same time a statistical account of the doings of the female lunatic asylum at Venice, during the years 1837 and 1838, regarded under the influence of moral causes.

Dr Bouros, Professor of Pathology and Clinical Medicine at Athens, gave the results of his chemical analysis of the principal hot springs of Greece, with some account of their medical uses, and geographical and geological notices of their localities.

Dr Meneghini, Assistant to the Botanical chair at Padua, read an article on Phrenology, in which he expressed his conviction that the reason of that doctrine suffering in the opinion of some learned and impartial men, is traceable to the circumstance of many phrenologists, since the time of Gall, forgetting the fundamental precept of their master, to take anatomical facts for their guide, and to weigh well the deductions drawn from cranioscopy. Having taken a short and rapid view of the structure of the brain, he showed, with the aid of comparative tables, that the prominences of various regions of the cranium, instead of being produced by the convolutions immediately under them, might often owe their origin to some extraordinary developement of deep-seated parts.

The discussion at the last meeting of this section, 14th October, was sustained mainly by Professor Puccinotti and Dr Comandoli, who endeavoured to combine all the different theoretical propositions advanced during the previous sederunts. Professor Puccinotti attempted to show that all such had the tendency to give a character of general agreement to certain cardinal points on which the Italian pathology is founded, and that those individuals did not properly understand it who considered this system as divided by doctrines fundamentally different or opposite. On such a harmony of principles he conceived depended the expectations and hopes of the ultimate utility and excellence of such reunion as the present.

Besides these proceedings there were others which do not come under either of the above categories, but these were few or of little consequence. Among the first were some prizes offered by different individuals of the Section.

Joseph Frank* proposed a prize of 500 francs for the best essay on the Hippocratic system of medicine, to be decided at the next meeting of the association.

Dr Thaon of Leghorn also proposed one to be awarded to the individual who would bring forward the greater number of satisfactory observations on a method of curing carcinoma of the breast.

Thus terminated the proceedings of the medical section of this association, of which the above is a somewhat curtailed account. Their meetings were interrupted, as well as those of all the other sections, on the 8th day of the Congress, by a general meeting similar to the first, at which different letters were read, and the names mentioned, of various individuals who had come to the meeting of the association as deputies from different academies or universities. These were in all upwards of forty, composing sixteen deputations. The Rev. Raffaello Lambruschini then read a paper on the part which the Earth acted in preparing and supplying the Nutrient Juices to Plants. He was followed by the Prince of Musignano on the Electrical Properties of the Torpedo,—by Professor Belli of Milan, on the Formation of Hail,—by Professor Domnandos, deputy from the University of Athens, who brought forward some geological observations on the Island of Santorino,—and lastly, Tommasini read a memoir on the Influence of Habit on the Animal Economy, both in its Physiological and Pathological condition.

On the last day, (15th October,) another general meeting was held, at which the Grand Duke of Tuscany, (who also attended one of the meetings of each of the sections,) attended, when the general and sectional secretaries read their reports, and some business of a miscellanecus character was gone through. The association having been announced to meet next year (1840,) at Turin, and the year following (1841,) at Florence, then closed its business for this session.

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* Son of Peter Frank, who was long connected with the schools of medicine of Pavia and Vienna, as was also Joseph himself, though subsequently Professor of Practical Medicine in the University of Wilna. He has now for many years abandoned his public pursuits, and retired for the most part to a property he has on the banks of the Lake of Como.

I have only to add, that all the arrangements throughout were distinguished by a regularity and fitness scarcely to have been expected in so early a stage of the association's existence, and that its members had great reason to be highly gratified by the steps taken for their accommodation and amusement during their sojourn in Pisa. Every public place was thrown open for their inspection, and they had the free ingress to the Casino of the *good* town of Pisa, where newspapers and journals were found all day, and in the evening, dancing or conversation reunions. They were likewise honoured by an invitation to dine in the Duke's Palace, with the Governor of the city, of which the greater part availed themselves, and drank most enthusiastically to the owner's health.

Each member on reclaiming his passport which he had deposited on enrolling his name, also received as a souvenir of this first establishment of the association, a medal, along with a printed copy of Rosini's address, and other pamphlets connected with the proceedings of the congress. The medal is stamped on one side with the head of Galileo, and on the other, with the architectural group for which Pisa is so justly famed, namely, the Cathedral, Campo Santo, Campanile, and Baptistery,—above which is the inscription: A onore di Galileo, Pisa—memore del primo consessu dei Naturalisti Italiani auspice Leopoldo II. Ottobre 1839.

Bill to incorporate a College of Physicians and Surgeons in the Province of Upper Canada. (Kingston, Upper Canada, July 13, 1839.)—The following Bill, incorporating a College of Physicians and Surgeons in this province, passed the provincial Parliament of Upper Canada in April 1839. Since about 1824 to the present time, there has been a medical board at Toronto, the capital; Graduates of British universities and licentiates of British Colleges of surgeons produced their Diplomas before the board, and thereupon, without any examination, received a certificate, on producing which at a certain government office, they received a license to practise, and were gazetted. Gentlemen who had not passed an examination before any university or college of surgeons were examined *viva voce* by the board, no regard being held with respect to where or how long they had studied. At Quebec, there is a similar board for Lower Canada. The majority of the practitioners are of British birth and education. In the two Canadas, there are no public sources of medical instruction,—natives of the province requiring for this purpose to proceed to Britain or to the United States. This necessity will be in part obviated by the intended establishment of medical professorships in the University of Toronto, (to be called King's College and University,) which institution it is expected will be in operation in the course of a few years.

Whereas, Christopher Widmer, President of the Medical Board of this Province, William W. Baldwin, M. D., member of the Medical Board, John Shortt, M. D., R. C. Horne, Member of the Medical Board, William C. Gwynne, M. B., Member of the Medical Board, John King, M. D., Member of the Medical Board, Robert Hornby, M. D., Member of the Medical Board, Walter Telfer, Surgeon, Member of the Medical Board, Alexander Burnside, Licentiate, Lucius O'Brien, M. D., Member of the Medical Board, H. Boys, Duncan Campbell, M. D., Thomas Duggan, Licentiate, John Mackelcan, Member of the Royal College of Surgeons, John Barnhart, Junior, James Cotham, Member of the Royal College of Surgeons, London, Edward Morton, Member of the Royal College of Surgeons, London, Francis Clarke Newburn, Licentiate, Thomas Rolph, Member of the Royal College of Surgeons, London, William Bulmer Nichol, Licentiate, William Craigie, (Surgeon,) Licentiate, C. W. Covernton, M. D. Member of the Royal College of Surgeons, B. Cotter, M. D. and Surgeon, George Southwick, Licentiate, John Stewart, Member of the Royal College of Surgeons, Edinburgh, John Cromlin, M. D., R. McLean, surgeon, R. Stewart, Surgeon, Samuel John Stratford, Member of the

Royal College of Surgeons, London, William Tullidge, Surgeon, William Rees, Thomas T. Ranken, M. D., Member of the Royal College of Surgeons, London, Patrick McMullin, Joseph Anderson, James Coleman, R. McDonald, M. D., William Alison, Surgeon, G. Herrick, M. D., A. B. J. Wilson, Surgeon, George H. Low, Member of the Royal College of Surgeons, London, William Clarke, L. R., C. J., John Turquand, Licentiate, William Dunn, M. D., James McIlmurray, Member of the Royal College of Surgeons, London, W. H. Burritt, William Drurie, Assistant Inspector of Ordnance Hospitals, David J. Bowman, Licentiate, Elijah E. Duncombe, Licentiate, and Thomas A. Williams, have by their petition amongst other things, represented that the laws now in force in this province, regulating the practice of the medical profession, and for the prevention of persons practising without licence, have been found very inadequate, and have prayed that such alterations and amendments may be made in the existing laws as may be most conducive to the interests of the medical profession and the public at large. *And whereas*, it is highly desirable that the profession of medicine in this province should be placed upon a more respectable and efficient footing, and that a more summary mode should be provided for the conviction and punishment of persons practising without a license. *Be it, &c.*—That an act passed in the fifty-ninth year of the reign of his late Majesty King George III., entitled, " An Act to repeal an Act passed in the fifty-fifth year of his Majesty's reign, entitled, ' An Act to License practitioners in Physic and Surgery throughout this Province,' and to make further provision for licensing such practitioners," and also an act passed in the eighth year of the reign of his late Majesty King George IV. entitled, " An Act to amend the laws regulating the practice of Physic, Surgery, and Midwifery, in this Province," be, and the same are hereby repealed.

2. *And be it, &c.*—That the members of the Medical Board under and by virtue of the said first above recited act, namely, Christopher Widmer, Member of the Royal College of Surgeons, London, and Staff-Surgeon on half pay, of her Majesty's Forces,—William Warren Baldwin, Doctor of Medicine of the University of Edinburgh,—Robert C. Horne, Member of the Royal College of Surgeons, London, and late Assistant Surgeon of the Glengarry Regiment of Light Infantry,—James Sampson, late Assistant Surgeon on half-pay, of Her Majesty's Forces,—Peter Deihl, Member of the Royal College of Surgeons London,—John King, Doctor of Medicine of the University of Edinburgh, and Licentiate of the Royal College of Surgeons,—George Neville Ridley, Member of the Royal College of Surgeons, London,—Samuel John Stratford, Member of the Royal College of Surgeons London,—Robert Hornby, Doctor of Medicine, of the University of Edinburgh,—Lucius O'Brien, Doctor of Medicine, of the University of Edinburgh, and Member of the Royal College of Surgeons of London,—William Drurie, Assistant Inspector of the Ordnance Medical Department, on half-pay,—Joseph Hamilton, Doctor of Medicine, of the University of Edinburgh,—Walter Telfer, Licentiate of the Royal College of Surgeons in Edinburgh,—James Hamilton, Doctor of Medicine of the University of Edinburgh,—William C. Gwynne, Bachelor of Medicine of the University of Dublin,—and Robert Douglas Hamilton, late Surgeon of the Royal Navy, and their successors to be nominated and appointed as hereinafter provided, shall be, and they are hereby declared to be one body corporate and politic, in deed and in law, by the name of " The College of Physicians and Surgeons of Upper Canada," and shall have perpetual succession and a common seal, with power to change, alter, break, or make new the same, and they and their successors, by the name aforesaid, may sue and be sued, implead and be impleaded, answer and be answered unto in all or in any Court or Courts of Record and places of jurisdiction within this province, and that they and their successors by the name aforesaid shall be able and capable in law to have, hold, receive, enjoy, possess, and retain for the end and purposes of this act, and in trust and for the bene-

fit of the said college, all such sums of money, as have been paid and given, or shall at any time hereafter be paid, given, devised, or bequeathed by any person to and for the use of the said college, and that they and their successors, by the name aforesaid, shall and may at any time hereafter, without any licence or mortmain, purchase, take, receive, have, hold, possess and enjoy, any lands, tenements or hereditaments, or any estate or interest derived or arising out of any lands, tenements or hereditaments, for the purpose of the said college, and for no other purpose whatsoever; and may also, in the like manner, sell, grant lease, demise, alien or dispose of the same, and do or execute all and singular the matters and things that to them shall or may appertain to do. *Provided always*, the said real estate shall at no time exceed in value the sum of Ten Thousand Pounds of lawful money of this province.

3. *And be it, &c.*—That the said persons composing the Medical Board as herein before-mentioned, and their successors, shall from and after the passing of this act, be called Fellows of the College of Physicians and Surgeons of Upper Canada.

4. *And be it, &c.*—That the Fellows of the said College, and their Successors, shall and may have power to elect in such manner, and from time to time, from and out of the members of the said College, such and so many persons who shall also be fellows thereof, as in their discretion they shall think fit.

5. *And be it, &c.*—That the fellows for the time being of the said college, be, and they are hereby declared to be governors of the said college, and that any four of them with the President, or in his absence the Vice-President, be a quorum, and shall have full power and authority to frame and make statutes, rules, and ordinances, for the government of the said college, and of the members thereof; and also from time to time by any new statutes, rules, or ordinances, to revoke, renew, augment, or alter, all, every, or any of the said statutes, rules, and ordinances, as to them shall seem meet and expedient. Provided always that the said statutes, rules, and ordinances, or any of them, shall not be repugnant to the laws and statutes of this province; *Provided always*, that as well for the election of a President and Vice-President, as for the confirmation of statutes, rules, and ordinances as aforesaid, the fellows not resident in the city of Toronto may vote by proxy.

6. *And be it, &c.*—That all persons now authorised by law, or who may hereafter be authorised by law, to practise physic, surgery, and midwifery, within this province, and who shall comply with the provisions of this act, shall be and they are hereby declared to be members of the said College of Physicians and Surgeons of Upper Canada, and shall be subject to such rules, regulations, and bye-laws, as may be adopted by the fellows of the said college from time to time.

7. *And be it, &c.*—That the fellows of the said college shall annually, on the first Monday in January, in each and every year, except the first election, which shall take place on the second Monday in May, in the year of our Lord one thousand eight hundred and thirty-nine, elect from among themselves a President, and one Vice-President, who shall preside in the absence of the President, and no statute, rule, or ordinance, shall have any effect, or be binding upon the fellows of the said college, or the members thereof, until the same shall have been published thirty days in the Upper Canada Gazette.

8. *And be it, &c.*—That the fellows of the said college shall have power from time to time to appoint such and so many officers in the said college, as they may think proper, and at their pleasure to remove the same.

9. *And be it, &c.*—That from and after the passing of this act, it shall not be lawful for any person not being a fellow or member of the said College of Physicians and Surgeons of Upper Canada, and not having been

licensed by the Lieutenant Governor of this province, or not having been heretofore licensed by any medical board, or not being actually employed as a physician or surgeon in her Majesty's naval or military service, to practise physic, surgery or midwifery in this province for hire, gain, or hope of reward; and any person who shall practise physic, surgery, or midwifery, for hire, gain, or hope of reward, not licensed as aforesaid, or not being actually employed as a physician or surgeon in her Majesty's naval or military service, shall, upon conviction thereof, before one justice of the peace, upon the oath of one credible witness, forfeit and pay the sum of five pounds; *Provided* that nothing in this act contained shall be construed to prevent or prohibit any female from practising midwifery in this province, or to require such female to take out such license as aforesaid.

7. *And be it, &c.*—That no person now authorised to practise physic, surgery, and midwifery, within this province, shall be entitled to the privilege of becoming a fellow or member of the said college, unless he shall first pay the sum of five pounds to such person, and in such manner as the fellows of the said college shall from time to time direct, nor until he shall conform to the rules and regulations which the fellows of the said college may from time to time make respecting the mode of becoming members of the said college.

11. *And be it, &c.*—That from and after the passing of this act, no person shall be admitted to practise physic, surgery, and midwifery, or either within this province, until he shall first obtain a license so to do, under the seal of the said College of Physicians and Surgeons of Upper Canada, except he be a fellow or member of the said College of Physicians and Surgeons of Upper Canada, or except he has beforethe passing of this act, been licensed by the Lieutenant-Governor of this province, or except he be actually employed as a physician or surgeon in her Majesty's naval or military service.

12. *And be it, &c.*—That upon the application of any person exhibiting a diploma or license from any university in her Majesty's dominions, or from any college or faculty of physicians or of surgeons in the united kingdom as physician or surgeon, or a commission, or warrant as physician or surgeon in her Majesty's naval or military regular service, and upon satisfying the said fellows of the said college, that he is the person named in such diploma, license, commission or warrant, it shall and may be lawful for the fellows of the said college to grant such applicant a license under the seal of the said college to practise physic, surgery, and midwifery, or either, as the case may be, in this province.

13. *And be it, &c.*—That it shall and may be lawful for any person while employed on actual service in her Majesty's naval or millitary service as physician or surgeon to practise physic, surgery, or midwifery in this province, without a license, whilst he is so employed.

14. *And be it further enacted, &c.*—That the fellows of the said college shall from time to time determine and direct by some statute, rule, or ordinance, the amount of fees to be paid by persons applying for a license to practise physic, surgery, and midwifery, or either within this province. *Provided always*, that the amount to be paid, shall in no case exceed the sum of five pounds.

15. *And be it, &c.*—That when any person shall be charged on the oath of one or more credible witness or witnesses before any justice of the peace, with having practised physic, surgery, or midwifery, for hire, gain, or hope of reward, without a license, except in the case of a female practising midwifery, the said justice may summon the person charged to appear at a time and place to be named in such summons, and if he shall not appear accordingly, then upon proof of the due service of the summons upon such person, by delivering the same to him personally, the justice may either proceed to hear and determine the case, ex parte, or issue his warrant for apprehending such person and bringing him before himself, or some other jus-

tice of the peace: or the justice before whom the charge shall be made, may, if he shall so think fit, without any previous summons, issue such warrant, and the justice before whom the person charged shall appear or be brought shall proceed to hear and determine the case.

16. *And be it, &c.*—That in default of payment of any fine imposed under the authority of this act, together with the costs attending the same, within the period specified for the payment thereof at the time of conviction, by the justice of the peace before whom such conviction may have taken place, it shall and may be lawful for such justice of the peace to issue his warrant, directed to any constable to levy the amount of such fine and costs within a certain time, to be in the said warrant expressed; and in case no distress sufficient to satisfy the amount shall be found, it shall and may be lawful for him to commit the offender to the common jail of the district wherein the offence was committed for any time not exceeding one month, unless the fine and costs shall be sooner paid.

17. *And be it, &c.*—That no conviction under this act shall be quashed for want of form, and no warrant of commitment shall be held void by reason of any defect therein, *provided* it be alleged that the party has been convicted, and there be a good and valid conviction to sustain the same.

18. *And whereas* for the protection of the public, it is necessary that some supervision and control should be had over persons vending medicines and drugs, or otherwise acting as apothecaries within any city or town corporate,—*Be it, &c.*—That the fellows of the said college shall and may from time to time make such rules and regulations for the government and proper management of persons acting as apothecaries within any city, or town corporate, town or village containing two hundred or more inhabitants, within this province, as they may think proper, and may impose such penalty for the breach or non-observance of the same as in their discretion they may deem expedient, not exceeding the sum of two pounds for any one offence, which said penalty may be enforced and collected before any justice of the peace, in the same manner as is herein before provided for the conviction and punishment of persons practising physic, surgery, or midwifery without a license; which said rules and regulations before they shall be binding or effectual for the purposes of this act, shall be published at least thirty days in the Upper Canada Gazette.

19. *And be it, &c.*—That all fines and penalties levied and collected under and by virtue of this act shall be paid into the hands of the proper officer appointed by the said fellows from time to time, to and for the use and benefit of the said college.

20. *Provided always, nevertheless, and be it, &c.*—That nothing herein contained shall extend or be construed to extend to restrain the power of the legislature at any time to repeal, alter or modify this act in any of its provisions.

North of England Medical Association.—At a meeting of the physicians and surgeons of the northern counties of England, convened by a requisition bearing 100 signatures, " to consider the steps proper to be taken, with a view to obtain from Parliament such legislative measures, in reference to the medical profession, as are best calculated to protect the interests of its members, and to promote the public welfare," and held in the lecture room of the Literary and Philosophical Society Newcastle, on Thursday the 14th November 1839, Dr Headlam was called to the chair, Mr C. T. Carter was appointed secretary, and the following resolutions were unanimously agreed to:—

Moved by T. M. Greenhow, Esq. of Newcastle, seconded by William Mordey, Esq. of Sunderland,

That, in the opinion of this meeting, the medical profession throughout Great Britain and Ireland, has long been in a most unsatisfactory and anomalous condition; and that, owing to the defective nature of existing laws and institutions, consequences have ensued which imperatively demand the intervention of the legislature, being alike injurious to the profession, and incompatible with the welfare of society.

Moved by Dr Clanny of Sunderland, seconded by Dr Lynch of Newcastle,

That, with a view to submit to the notice of Parliament the sentiments entertained by members of the profession at large, on subjects relating to their interests, and for the purpose of more effectually impressing upon the legislature the urgent necessity of reform in the medical institutions of this country, it is especially desirable that there should be union amongst medical practitioners.

Moved by John Fife, Esq. of Newcastle, seconded by Francis Bennett, Esq. of Gateshead,

That, in order to adopt such measures as may facilitate the attainment of an improved system of medical government, as well as for the advancement of medical and surgical knowledge, and the promotion of friendly intercourse between practitioners residing in the northern counties, an association be now formed, under the title of the "North of England Medical Association."

Moved by Dr Elliot of Carlisle, seconded by Dr Knott of Newcastle,

That a prominent feature in this association shall be made to consist in an active and zealous co-operation with other societies of a similar character, throughout the United Kingdom.

Moved by Septimus Green, Esq. of Houghton-le-Spring, seconded by Dr Fife of Newcastle,

That any gentleman shall be eligible as a member of this association, who possesses a physician's or surgeon's diploma, or a license of the Society of Apothecaries, London, or who shall have been in practice, as a general practitioner, previously to the year 1815; and that the subscription of each member be L. 1 annually.

Moved by Dr Cahill of Berwick, seconded by E. H. Maling, Esq. of Sunderland,

That the government of this association be vested in a president, eight vice-presidents, a treasurer, a secretary, and a council, all of whom shall be elected annually, by open vote—proxies being allowed for gentlemen residing more than fifteen miles from the place of meeting—five to constitute a quorum.

Moved by Dr Miller of Sunderland, seconded by Geo. Green, Esq. of Sunderland,

That there shall be two regular meetings of the association in each year, at such time and place as shall be determined by the council. An extraordinary meeting shall at any time be called, either by the council, or by the secretary, in compliance with a requisition addressed to him, and signed by twenty members.

Moved by Dr Keenlyside of Stockton, seconded by Charles Ferguson, Esq. of Sunderland,

That circulars be sent to the physicians and surgeons of this and the adjoining counties, containing the resolutions of this meeting, and inviting them to become members of the association.

Moved by Dr Bates of Newcastle, seconded by Dr De Mey of Newcastle,

That the following gentlemen do constitute a provisional committee for carrying into effect the foregoing resolutions, and for arranging the preliminary proceedings of the first general meeting of the association, and that they be requested to prepare for the consideration of that meeting, a report of the present state of the medical profession, and the draft of a petition to both Houses of Parliament founded thereupon, viz.—Dr Headlam, &c. (Signed) T. E. HEADLAM, M. D., *Chairman.*
CHAS. T. CARTER, *Hon. Secretary.*

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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Historical Notices, designed to illustrate the question whether Typhus ought to be classed among the Exanthematous Fevers.* By CHARLES WEST, M. D., Graduate of the University of Berlin.

FOR many years after Sydenham began to practise medicine, he believed that there existed but one form of fever. The pestilence of the years 1665 and 1666, however, impressed upon many diseases a new character, and was followed by fevers differing in many respects from those which had previously occurred. This diversity in the features of disease could not escape the notice of so acute an observer as Sydenham, and appears to have at first occasioned him considerable perplexity. From these difficulties he endeavoured to extricate himself by giving up his belief in the unity of fever, and by regarding each variation in form which the disease might exhibit as an essential change in its nature. Six different fevers are accordingly described by him as having occurred within the short space of twenty years; though, lest it should appear that he thus multiplied diseases without end, he proposed the ingenious theory that certain tribes of epidemic disorders constantly follow each other in one determined series or circle.

The alteration in character which fever has undergone within the last few years has led to the adoption of opinions not unlike those of Sydenham. Some authors have described the disease as "the new fever," while others, regarding it as altogether of a specific nature, have not hesitated to class it among the exanthemata. Anxious to ascertain how far past experience supports the notion that typhous fever is a disease of a specific nature, the writer devoted considerable time to examining the history of epidemics, and has been thereby led to a conclusion unfavourable to that supposition, while his investigations have forced upon him the conviction, "That there is one predominant fever in nature, the knowledge of which is absolutely necessary for the successful treatment of all others; that this fever, though essentially the same, often varies in the lesser circumstances; and that it is sometimes accompanied with symptoms which have been supposed peculiar to inflammation, and frequently by spots of various kinds, which are considered as certain indications of putrefaction; but these circumstances do not with greater propriety indicate a particular species of fever than the accidental spots on their leaves constitute different orders of plants."*

Before proceeding further it will be necessary to digress for a moment in order to define the sense in which the words exanthema and exanthematous fever are here employed. Dr Willan, and almost all who since his time have treated of skin diseases, limit the term *exanthemata* to those appearances which are usually called rashes, and define them as "superficial red patches, variously figured, and diffused irregularly over the body, leaving interstices of a natural colour, and terminating in cuticular exfoliations." Earlier writers, however, included under that head a variety of diseases in which eruptions appeared on the skin; and the definition given of them by Cullen is, "Morbi contagiosi, semel tantum in decursu vitæ aliquem afficientes; cum febre incipientes; definito tempore apparent phlogoses, sæpe plures, exiguæ per cutem sparsæ." Many of the modern advocates for the exanthematous nature of typhus have used the term in this latter sense, as a synonym for eruptive fevers, and as designating a class which would include alike measles, small-pox, and scarlatina; and it will, accordingly, thoughout this paper, be taken in that signification. The aim of this paper being to disprove the claim of typhous fever to a place among the true eruptive fevers, it will naturally be expected that evidence should be adduced to show that the eruption is not invariably present, nor always of one character, that it runs no definite course, and has no fixed period of decline. At the same time, the weight of this evidence will be greatly increased if it can be proved that the fever itself does not observe one constant type, but that its character is altered by climate; that it differs in different years; and that its symptoms are modified by comparatively trivial circumstances.

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* Observations on the Management of the Prevailing Diseases in Great Britain, particularly in the Army and Navy. By J. Millar, M. D. London, 1783. Part ii. Chap ii.

The exhibition of such evidence is all that the writer now attempts, for it would occupy too much space were he to aim at giving a complete history of typhous fever, or to enter upon the debateable ground of the origin or antiquity of the disease.[*] For our purpose, it may suffice to know, that, in the year 1489,[†] a new disease appeared among the troops of Ferdinand, who was then laying siege to Granada. It is difficult to gather the precise nature of this affection from the scanty descriptions of Villalba; but the name " el tabardillo" applied to it has since been always used by the Spaniards to designate petechial fever. Moreover, although the plague was at that time raging in the south of Spain, yet the physicians regarded this as a different disease, and debated about its cause; some saying that it had been communicated by certain soldiers who came to the war at Granada from the island of Cyprus, where they had been serving the Venetians against the Turks, and where the disease was said to be endemic; while others attributed it to the contamination of the air by the number of unburied corpses. Be this as it may, the distemper was so fatal, that when Ferdinand entered Granada 20,000 of his men were wanting, of whom 3000 only had fallen by the sword of the Moors, while 17,000 had been carried off by pestilence. Here then we have an instance of a contagious disease resembling the plague, and prevailing at the same time that plague was raging, but so far differing from it as to receive a distinct appellation.

During the ensuing fifteen years we do not find express mention of petechial fever, though plague was very fatal throughout all parts of Europe; as proofs of which it may be mentioned, that it destroyed 30,000 men in London in the year 1499, the King and court flying the city, and taking refuge at Calais; and that in the year 1502, the Viceroy of Sicily was so alarmed at the prevalence of the plague in Barcelona, that he closed his ports against all vessels from that city. In the year 1505, the first epidemic of petechial fever prevailed in Italy, and in the following year England was ravaged for the second time by sweating-sickness; the same circumstances which in England and other northern countries gave rise to sweating-sickness, producing petechial fever in the south of Europe.[*] The epidemics of 1528–9 afforded a striking illustration of this fact, and are far from being a solitary instance of pestilence assuming very dissimilar forms in countries which differed from each other in soil or climate.

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[*] Those who wish to pursue this subject further will do well to consult the laborious work of Ochs, Artis Medicinæ Principes de curanda Febre Typhode comparatos, &c. Lipsiæ, 1830. Schnurrer, in his Chronik der Seuchen, Tübingen, 1823, gives a very good account of most epidemics of typhous fever. The notices in the fourth volume of Ozanam's Histoire Medicale des Maladies Epidemiques, Paris and Lyons, 1817–1823, are often erroneous, and appear to have been frequently obtained at second hand. The Epidemiologia Espanola; por Don Joaquin de Villalba, Madrid, 1803, contains much curious matter; but the descriptions of diseases are often meagre in the extreme. The antiquity of typhous fever is very learnedly argued for by A. J. Wawruch, Tentamen Inaugurale sistens Antiquitates Typhi Contagiosi; Viennæ, 1812; and the same opinion is supported by Rasori, Storia della Febre Petecchiale, Milano, 1813, pp. 198–234, and by V. Hildenbrand, über den ansteckenden Typhus, Wien, 1814, pp. 25–35. The authorities on both sides of the question are very fairly stated by Acerbi in the excellent history of typhous fever which he gives in his Dottrina Teorico-pratica del Morbo Petecchiale, Milano, 1822, pp. 132–209.

[†] Villalba, Epidemiologia Espanola, Tome i. p. 69.

Fracastorius was only 22 years old in 1505; the description which he gives of petechial fever refers, therefore, more particularly to the epidemic of the year 1528, when the disease seems to have been more severe than on its first appearance in Italy. It prevailed over the whole of Italy, and was, in all probability, the pestilence which almost annihilated the French army before Naples,[†] although this cannot be affirmed with certainty; for Fallopius[‡] speaks of bubo occurring as a symptom of the distemper in some of his father's servants at Modena. Probably petechial fever and plague occurred together. It was at Verona that Fracastorius[§] observed the disease, which attacked persons so insidiously that they scarcely thought themselves to be ill, nor sought for medical advice, until, suddenly, symptoms of malignancy appeared. These were great lassitude, extreme loss of strength, stupor, or noisy delirium, feeble pulse, violent purging, following the administration of gentle medicines, and profuse hemorrhage, unattended by any relief to the symptoms. Between the fourth and seventh day there appeared "in brachiis, dorso et pectore, maculæ rubentes sæpe et puniceæ puncturis pulicum similes." It is manifest that these spots were not such as are called petechiæ by authors at the present day, for Fracastorius enumerates the fading of the spots, their scanty eruption, or their assuming a dark colour among the unfavourable symptoms. But one circumstance which places it beyond doubt that these spots were not ordinary petechiæ, but a measly efflorescence, such as is now often met with in the course of fever, is that measles and petechial fever were so frequently confounded together that medical writers found it necessary to point out the distinctions between those two diseases. Cardanus, that universal genius whose reputation in other branches of science has cast his merits as a physician somewhat into the shade, mentions as one of a hundred deadly errors into which they who practised medicine in his day fell: "Quod pulicarem morbum, morbillum credunt."[*] He says, that this mistake has led to many serious faults in treatment, and accordingly he points out the differences between the two diseases. He notices that petechial fever does not, like measles, affect every body once during their life, but that it may occur several times in the same individual; that it is a very fatal disease, though only occasionally prevalent; and that it is associated with bubo or other pestilential symptoms. Nicolaus Massa[†] devoted a chapter to the same subject, and Montuus[‡] remarks, "Sed falso morbilli putantur puncta quædam pulicum morsibus non dissimilia, quæ per febres pestilentes in cutis superficie aliquando visuntur."

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[*] See the chronological table at the end of Der Englische Schweiss, von Dr J. F. Hecker. Berlin, 1834.

[†] Guicciardini, Istoria d'Italia, Vol. x. Lib. xix. Hecker, Lib. cit. pp. 71–81.

[‡] Opera omnia, Francofurti, 1600. Tractat. de tumoribus, Caput xxvii.

[§] H. Fracastorii Veronensis Operum Pars Prior. Lugd. 1591. De contagionibus, Lib. ii. Cap. vi. De febre quam lenticulas vel puncticula vel peticulas vocant.

The introduction of petechial fever into France is attributed by Fracastorius[§] to the circumstance of A. Naugerio, a friend of his, journeying on an embassy to Francis I., as far as Blois, where he died of petechial fever, which was thus introduced into a country where it was previously unknown. Fracastorius does not state that Naugerio was affected when he left his own country. When petechial fever first broke out in Italy, it was imagined that Italians only became its victims, and that the disease pursued them into foreign lands, while foreigners in Italy escaped unhurt. So, on the first appearance of the sweating-sickness, it was thought,

> "———— ——— the general air,
> From pole to pole, from Atlas to the east,
> Was then at enmity with English blood.
> For, but the race of England, all were safe
> In foreign climes; nor did this fury taste
> The foreign blood which England then contained."

This illusion was, however, soon removed in the case of both diseases, by their extension to other countries, probably owing to those great changes which were at that time taking place everywhere in the character of epidemics, rather than to the mere propagation of the diseases by contagion. But, however this may have been, traces of petechial fever are to be found soon after this time in the French writers. Fernelius[‖] alludes to it, and Ambrose Paré and Palmarius speak more fully on the subject. In this treatise on the plague, Ambrose Paré* devotes a whole chapter to the examination "De eruptionibus et maculis quas purpureæ nomen intelligunt." It would seem that spots of various kinds appeared; for, "maculis per pestilentes febres cutis suffunditur variis locis, pulicum aut cimicum morsui similibus, nec simplices semper maculæ sunt sed assurgunt nonnunquam in grani milii formam." Their dark colour and sudden recession are spoken of as being dangerous and often fatal symptoms. They often appear before the buboes; at other times after them; frequently no buboes appear, but the eruption alone shows itself, generally on the third or fourth day, sometimes later, and occasionally not till after death. Palmarius† mentions, among the symptoms of plague, spots like flea-bites, which "febrem fere sequuntur et tertio, quarto, aut septimo die erumpunt, interdum serius, interdum citius, interdum una cum febre exoriuntur; modo cum bubone et carbunculo interdum aliquando post, sæpe sine his, aliquando etiam post obitum, veneno in extincto cadavere adhuc debacchante. In febribus malignis sæpe solitariæ sunt absque bubone et carbunculo, non minus tamen, quam si adessent, periculosæ." Instances are here afforded of spots like flea-bites, being sometimes associated with bubonic plague, at other times showing themselves unattended by bubo, and varying in the date of their appearance from the third to the seventh day.

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[*] Hieronymi Cardani Opera omnia. Lugduni, 1663, Tome vii. De methodo medendi, Sectio prima. Cap. xxxvi. p. 216.

[†] Liber de Febre Pestilentiali. Venetiis, 1556. Cap. iv. De pestichiis, morbillis, variolis, ac aliis cutaneis papulis et maculis et earum differentia, p. 67–70.

[‡] Halosis Febrium. Lugd. 1558. Lib. vii. Cap. ii.

[§] Op. cit. p. 156.

[‖] Universa Medicina, cum notis, &c. J. et O. Heurnii—Tr. ad Rhenum, 1656. De Febribus, Cap. xviii.

The character of pestilence in Europe was now evidently undergoing a great change, and the solution of bubonic plague into a variety of kindred diseases had already commenced, although this process was not completed until the middle of the following century. De Thou ‡ speaks of an epidemic occurring in the year 1547, in the army of Charles V. at Zwickau, so severe in its symptoms as to prove fatal on the second or third day, but not attended by bubo; though "corpora illis liventia potius quam pallida, verminantibus passim papulis interfuere." The patients, moreover, suffered from extreme pain and heat of head, difficult respiration, vomiting, and bilious diarrhœa.

The Morbus Ungaricus, which appeared in the year 1566, at Comora in Hungary, in the army of Maximilian II., after his war with the Turks, and which afterwards extended over a great part of Europe, is one of the most striking of those mixed epidemics which formed the transition from plague to petechial fever. § The attack usually began about 3 or 4 P. M., with shivering, followed by heat, extreme pain in the head, pain and tenderness about the epigastrium, and intense thirst. On the second, or at latest on the third day, delirium came on, and like the other symptoms was aggravated towards evening. The tongue became dry and very black, and the lips were chopped. Some patients suffered much from colic, while others laboured under pleurisy, and spat blood. The disease ran its course in from fourteen to twenty days; the occurrence of deafness during its progress was considered to be a good sign, and was far from unusual. The parotid glands often swelled and suppurated; but the worst form of crisis was the formation of a carbuncle on the tarsus, which often produced gangrene of the extremities. Conradinus saw feet amputated in ten cases on this account at Vienna. In addition to these symptoms, however, spots like flea-bites appeared on the skin of all the patients. In some cases these spots were of larger size than in others; occasionally they occupied the whole body, but usually were confined to the chest, the spinal and intrascapular regions and the arms; and they were observed to assume a livid or blackish colour in dying persons.

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* Opera Ambrosii Parei. Parisiis, 1582. Lib. xxi. Cap. xxviii.

† De morbis contagiosis libri septem. Parisiis, 1578. De Febre Pestilenti, Liber ii. Chap. xxiv.

‡ J. C. Thuani, Hist. sui Temporis. Londini, 1733. Lib. iv. §. ix.

§ J. S. a Grafenberg, Observat Med. Rar. Libri vii. Lugd. 1644. Liber vi. De Febribus. De Morbo Ungarico is a translation from a German account of the disease by Balthasar Conradinus.

It may appear superfluous to seek for evidence to prove, that these spots, though termed petechiæ, were different from those to which that name is now applied; for the situation in which they were seen corresponds to that occupied by the measly eruption of typhous fever, and the changes in colour which they presented under different circumstances could not have occurred in real petechiæ. To place this point, however, beyond doubt, it may be well, even at the risk of being tedious, to quote from Sennertus,* a description of the spots which were at that time called petechiæ.—" Petechiæ enim habent conjunctam febrem, quæ ab aliis plerisque maculis abest. Nec elatæ, longæ, vel magnæ sunt, sed rotundæ et pulicum morsibus rectissime comparantur. Ne tamen pulicum morsus pro petechiis habeantur, qua ratione differant videndum. In morsibus pulicum in medio tanquam punctum quoddam morsus vestigium inest, quodque compressione non delitescit, etiam reliquo rubore circumquoque evanescente. Petechiæ vero, si digito comprimantur, evanescunt quidem sed redeunt, et nullum puncturæ vestigium medio conspicitur. Præterea petechiæ in brachiis, cruribus, pectore, et copiosius ac frequentius in dorso apparent, non autem in facie." Another valuable fact which we learn from the same author, is that the eruption in petechial fever was by no means limited to any particular day, but that very generally two distinct crops appeared, the former of which was generally looked on as symptomatic, the latter as critical, while in almost all cases the appearance of fresh spots after the seventh day was an unfavourable symptom. Felix Plater,[*] too, in describing his own case, speaks of the eruption of "maculæ pulicum morsibus haud absimiles," on the tenth day of a fever. The advocates of the opinion, that typhous fever is a specific exanthematous disease would not find it very easy to adduce instances of similar irregularity in the appearance of the eruption of small-pox or measles.

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* Opera. Parisiis, 1641. Tom. ii. De Febribus, Lib. iv. Cap. xiii. p. 742.

Allusion has already been made to the solution of plague into other diseases, and each succeeding epidemic, of which we now find mention, affords fresh proof of the reality of its occurrence. No one is ignorant how famine and pestilence wasted Holland during the gigantic efforts which the Dutch made to throw off the Spanish yoke. Forestus[†] informs us, that pestilence then presented itself not merely under the ordinary form of bubonic plague, but spots alone appeared on some persons, while others died of malignant fevers, unaccompanied by any of the peculiar external characters of pestilential disease. Another witness to the horrors of those times, Cornelius Gemma,[‡] watched the same class of maladies in Belgium, till, in 1574, he saw them assume most of the characters of true plague, though still retaining this peculiarity, that serious symptoms seldom appear before the third day, and then on the fourth, fifth, or seventh day the patient might suddenly expire. All parts of Europe seem to have been alike ravaged by disease during the latter part of the sixteenth century, and time would fail were we to attempt to describe each epidemic. In the year 1574, Don Luis Mercado, Physician to Philip II. of Spain, published a treatise, "De essentia, causis, signis et curatione febris malignæ, in qua maculæ rubentes similes morsibus pulicum erumpunt per cutem. Valladolid, 1574."[§] Many works on the same subject appeared in Spain during the last twenty years of the century; there being various opinions as to the nature of petechial fever, some regarding it as identical with plague, others considering it to be a different malady arising from endemic causes.

During the diet at Ratisbon in 1594, there appeared a disease which De Thou [‖] says was similar to the Morbus Ungaricus. It does not seem to have been attended by bubo, but spots like flea-bites broke out on the surface, as well as others which were somewhat elevated above the skin, and were probably of the same nature as those to which the Dutch applied the name "Pepercooren."[¶] The varying type of the fever is worthy of note. Instances of it will be hereafter adduced as having occurred in different epidemics. " —— Febris quæ nunc tertiana simplex, nunc notha apparebat, cum et vera continua esset."

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[*] Observationum, Libri Tres. Basileæ, 1641, p. 316.

[†] Opera Omnia. Rothomagi, 1653. Tome i. Lip. vi. *passim*, and especially Obs. iv. v. vi. and xxxv.

[‡] De Hemitritæo Pestilenti, in v. Grafenberg, Lib. cit. pp. 756—758.

[§] Villalba, Lib. cit. Tome i. p. 75.

[‖] Op. cit. Lib. xxxix. §. xxiii.

[¶] Joannis Heurnii, Opera Omnia. Lugduni, 1658. Tomus ii. De Febribus Liber, Caput xx.

Although bubonic plague continued still to occur during the former half of the seventeenth century, and not unfrequently raged to a great extent, yet no one can read the medical writers of those times without being struck by the increased prevalence of petechial fever. De Lamprière * notices that "La fièvre purpurée, maculeuse, ou lenticulaire, est une autre sorte du nombre des malignes, et que est d'ordinaire avantcourreuse de la pestilente." He describes its symptoms shortly, and sums them up in some Latin verses which he quotes from one of his contemporaries. Impressed with the idea that plague proceeds from a specific cause, he laboured hard, though not very successfully, to establish the distinctions between plague and petechial fever, but allows that the two diseases are allied to each other, and that both are of a contagious nature.

During the continuance of the thirty years' war, neither famine nor pestilence ceased in central Europe. The war was carried on in a manner which seemed designed to aggravate its horrors; for the troops lived by plunder; wherever they came they left a desert behind them, and never quitted a town or village without burning the houses or razing them to the ground. Thus deprived of all places of refuge, the luckless inhabitants were forced, with their wives and children, to join the train of the army. Disease attended their steps; and all who were attacked by illness, uncared for were left behind, and thus served to spread death around. Of the diseases of this time one specimen may suffice, and no better could be chosen than the sad tale which Claromontius† tells of the state of Lotharingia, and of the town of Nancy during this period. The enemy had placed a garrison in Nancy after laying waste the whole country round, and slaughtering the inhabitants or driving them into captivity. The ground was left untilled, and thence arose so dreadful a famine, that the people who remained fed upon roots, dogs, cats, or horses. To add to their thus unspeakable wretchedness, pestilence broke out in the town and neighbourhood, while the heat of the sun was so great that the ground was burnt up, and the very trees drooped their leaves. The disease became universal; in every house there lay some dead, and many died untended. The graves were choked, and the living were not sufficiently numerous to bury the dead, who were left exposed in the highways, or at most, were covered with a few spades-full of earth; and yet the wolves and birds of prey refused to feed upon their bodies. This distemper, although so dreadful,

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* Traité de la Peste. Rouen, 1620. Première Partie, Chap. xx.

† De aere, locis, et aquis, terræ, Angliæ. Londini, 1672.

yet did not present quite the features of bubonic plague, and though occasionally so suddenly fatal that people fell down dead while seated at table, yet usually it ran a much more protracted course. It began with violent pain in the head, vomiting, and often with fainting. The body was bathed in a profuse sweat, attended with a sense of pungent heat; and the thirst was intense, and unrelieved by drink. In some patients buboes appeared on the seventh day, in others exanthemata showed themselves at that time, and these were usually looked upon as favourable symptoms; —for most persons, in whom they did not occur, suffered from incessant watchfulness, violent delirium, and profuse sweats; and ultimately died.

The evidence of Diemerbroeck* as to the transmutation of petechial fever into plague at Nimeguen in the year 1635 is particularly valuable. He informs us, that, during the spring of 1635, a pestilential epidemic fever was very prevalent through the whole province of Guelders. The summer was hot, the autumn still hotter, and during it putrid diseases increased; small-pox, measles, diarrhœa, and dysentery of the worst kind abounded. "Sed omnium maxime prædicta febris pestilens, quæ indies majora incrementa sumens, magis magisque in pejus mutabatur, et purpurata, (quam Petechialem vocant Itali) evadebat; donec tandem in apertissimam pestem transiret."

It would not be very easy to find, even at the present day, a better treatise on typhous fever than that of Riverius,† who was an eye-witness to the pestilence which prevailed at Montpelier, after the siege of that city in the year 1623, and which carried off a third of its inhabitants. Riverius seems to have had a mind more independent and less shackled by names and systems than most of his predecessors, and, accordingly, having observed the great similarity between *febris pestilens*, or plague, and *febris maligna*, he treats of the two diseases together. He remarks that no single symptom can be set down as pathognomonic of these diseases, for in true plague bubo and carbuncle do not always appear, neither is the *febris purpurata* invariably characterized by the eruption of spots, nor are all the symptoms of these affections ever found assembled in one person. That which is distinctive of pestilential fevers is, that all the symptoms have a peculiar character which is not met with in other fevers, and that the different symptoms do not correspond with each other; thus, for instance, while the pulse is scarcely affected the patient suffers intense pain in the head, and is in a state of watchfulness or delirium. He likewise observes, that fevers attended with many symptoms of pestilence, even with an eruption of purple spots, sometimes occur at a period when no pestilential epidemic prevails.

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* Opera Omnia. Ultrajecti, 1685. Tractatus de Peste, Lib. i. Cap. iii.

† Lazari Riverii, Praxis Medica. Editio Nona, Hagæ Comitis, 1658. Tome ii. Lib. xvii. Sectio iii. pp. 437—488.

The epidemic which Riverius describes, differed from plague only in the non-appearance of bubo, and was attended by an eruption such as we have already frequently described. The difference between these spots and *petechiæ sine febre* did not escape his observation. He refers the latter to poorness and fluidity of the blood in persons prone to hemorrhages, while the spots in fevers result from an altered nature of the blood, and are sometimes critical, sometimes only symptomatic. Their appearance on the fourth, seventh, ninth, or some other critical day indicates a favourable crisis, but they likewise appear on other days. A copious eruption of the spots was a good sign; their retrocession a very unfavourable symptom.

Nearly a thousand years have passed since Rhazes wrote an account of the small-pox. To that treatise we still refer, and find in it a description of the disease just as it now exists. The symptoms are the same at the present day as they were then; the eruption presents the same character, the fever runs a similar course. But, with petechial fever the case is very different. We have seen it associated with bubo and carbuncle, and becoming transmuted into plague, and we have seen it unattended by any such symptom. The eruption has been found to be sometimes absent, sometimes it appeared on the third day, at others not till the tenth. Cases have been mentioned above, in which the fever was of the continued kind, others in which it assumed an intermittent type. Of this latter occurrence, Bartholinus has recorded a remarkable instance.[*] He informs us that, during the summer of 1652, which was unusually hot and dry, an intermittent tertian fever prevailed epidemically at Copenhagen, and affected many persons. Its type was various, sometimes occurring every day, at other times on alternate days. It was attended by various symptoms; severe pain of the head, especially at the occipital region, pain of the loins and back, together with burning heat of the skin, bilious vomiting, thirst, restlessness, and occasional delirium, were of the most frequent occurrence. Petechiæ likewise appeared on the surface, and, fading during the remissions, reappeared on the return of each paroxysm.

In the course of our inquiries we have now reached a period when the diseases of England obtained other chroniclers than the mere historian. We will accordingly select from Willis[†] the account of the typhous or camp-fever which occurred at or near Oxford, in the year 1643, among the troops of the King and Parliament. This history will afford a good illustration of the fact, that typhous fever may appear, and run its course for some time without being attended with any eruption. The disease broke out in the spring of 1643, both in the royal garrison at Reading, as also among the troops of the Earl of Essex, who laid siege to that place, and soon became the worst enemy with which each army had to contend. So severely, indeed, did the army of the Earl of Essex suffer, that, though Reading surrendered in April, it was the middle of June before he approached Oxford, and then he pitched his camp ten miles distant from that place, at Thome. The royal troops were quartered partly in the town, partly in the surrounding villages; and the infantry, who were crowded together in small inns, and were dirty in their own habits, suffered most, falling sick by companies. The disease spread from the soldiery to those who lodged them, and by midsummer extended to a circuit of ten miles around Oxford, and was particularly fatal to the old. At first, the malady resembled putrid fever, though more irregular in its course; sweat or diarrhœa being the most usual forms of crisis; while in many cases, after the sixth or seventh day, head affection came on, and the patients died either in a state of raging delirium or of coma. About midsummer the disease increased in fatality, and the symptoms underwent a change, for the pulse became weak, irregular, and often intermittent, exhaustion occurred very suddenly, and there appeared an eruption of spots, some of which were small and of a bright-red colour, while others were larger, and of a more livid hue, and buboes formed in the groins of several patients. This fever bore so many points of resemblance to plague, that a tract* was written by royal command; one object of which was to point out the differences between the two diseases. It may suffice to mention this fact without entering into a detail of the author's arguments. One only we will mention, which is, that although in this sickness a great many were spotted, yet in comparison of those who recover, but few of them die, while in plague almost all die upon whom spots appear.

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[*] T. Bartholini, Historiarum Anatomic. Rarior. Cent. I. et II. Hafniæ, 1654.—Cent. II. Hist. 56.

[†] Diatribæ Duæ, Medico-Philos., quarum prior agit de Fermentatione altera de Febribus, &c. Londini, 1659.—De Febribus, Cap. xiv. Pp. 171—174.

In the year 1658, an intermittent fever, attended with a measly rash, prevailed over the whole of England, and converted, as Morton † tells us, the whole island into one vast hospital. Morton observed the disease in London, Willis ‡ at Oxford, and the accounts given by the two nearly coincide. In some patients it appeared as a regular intermittent, in others, its course was irregular, and in some it assumed the continued form. Morton observes, that in many patients after the sixth or seventh intermission, all traces of periodicity disappeared, and the disease changed into malignant continued fever, being accompanied by spasms and delirium, and proving fatal on the 17th or 21st day. In others, diarrhœa or vomiting came on, or inflammation of the lungs or pleura, and death followed on the 7th, 9th, or 11th day. The intermittent type seems to have been the more usual in the neighbourhood of Oxford, and the fever was either tertian or quotidian, but usually the former. In all cases the head symptoms were very severe, there being either violent headach or singing in the ears, stupor, or incessant watching. "Observavi," says Willis, "in nonnullis, quod primo aut secundo ægrotationis die maculæ latæ et rubicundæ morbillis similes in toto corpore sensim eruperint, quibus brevi postea evanidis febris statim intensior et præcipue affectiones capitis longe graviores evaserunt." At first the pulse was full and regular, but afterwards it became weak, unequal, and often intermittent. The occurrence of subsultus was a very unfavourable sign, most who died fell into a state of stupor, from which they never recovered. The disease was contagious, and proved particularly fatal to those who were previously sickly. When recovery took place, it did not follow any well marked crisis, but the patients proceeded slowly, and with many vacillations towards convalescence.

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* Morbus Epidemius anni 1643. Oxford, 1643.

† Opera Medica. Amstel. 1696. Tom. ii. Exercitatio Secunda, Appendix, pp. 234—236.

‡ Lib. cit. De Febribus, Cap. xvii.

Sydenham[*] noticed that a fever of a peculiar character preceded the plague of 1665, and was associated with it; and Dr Hodges,[†] who remained in London during the whole time that the plague prevailed, mentions that they who took the contagion likewise had a fever, which was of the worst kind, sometimes imitating a quotidian, at others a tertian, sometimes seeming to retreat, and at others attacking again with redoubled fury. Morton[‡] likewise informs us that they who were not affected by the contagion of the plague, were nevertheless attacked by an intermittent fever, and continued for days to experience febrile exacerbations and remissions. In addition to the plague tokens, real petechiæ,[§] and other eruptions, there also appeared a rash similar to that which has been supposed to be characteristic of typhus. This eruption, which was generally symptomatic, very rarely critical, differed in colour from a red to a purple hue. It was not persistent, but slight causes would occasion its temporary disappearance. " The spots," says Hodges,* " were sometimes few, but mostly very numerous; in some they were so thick as to cover in a manner the whole skin. I saw a little girl that was all over full with them, but upon a large sweat arising they all disappeared, and she recovered; yet sometimes the distemper was so delusory, that these spots would arise, and disappear, and come out again several times; that is, when nature gave its utmost efforts to expel the poison they might be seen upon the surface, but when the spirits languished, or upon any external cold, they would go in again."

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[*] Works translated by Dr Swan. London, 1794. Section ii.

[†] Loimologia, or an Historical Account of the Plague in London in 1665. London, 1721. P. 50.

[‡] Op. cit. p. 236.

[§] The restriction of the term petechiæ to spots not disappearing under pressure, and produced by ecchymosed blood, is quite of recent date. In a dissertation by one Braun, (Febris Maligna Petechialis, &c. Tubingæ, 1665,) we find him saying (Cap. vi.) "Maculæ ipsæ petechiales diversitatem ostendunt ab aliis v. g. culicum aut pulicum, quod harum punctulo medio ceu morsus vestigio careant, compressæ subito evanescant subito redeant."

Abundant evidence exists to prove that London was subjected almost every year to fever. We find this circumstance regretted by Erasmus in one of his letters, and alluded to by Dr Caius, while the synocha of London is minutely described by Morton. This was the disease which, having prevailed all over England in 1658, ceased just before the appearance of the plague, but showed itself again, combined with dysentery, after that disease had subsided. This fever and dysentery reappeared every autumn, and prevailed epidemically in London till the year 1672, when they gave place to measles, which raged with great violence for six months. After the declension of the measles, the fever lost its dysenteric character, and reappeared as before the plague, though usually with milder symptoms. Sometimes, however, the disease was attended with unfavourable complications, as diarrhœa, colic, or rheumatism; or if badly managed, it displayed signs of malignity, as petechiæ, and measly rash, and in some instances bubo or carbuncle.

Morton assures us that, between 1672 and 1692, synocha in some shape or other was the only form of epidemic fever. But Sydenham † has described a " new fever" which prevailed in the years 1684 and 1685, and differed from the fevers of preceding years. If, however, any one will study attentively Morton's treatise on fever, and then compare Sydenham's " Febris nova" with the epidemic of 1658, as described by Morton and Willis, he will, we think, arrive at the conclusion that the two diseases were closely allied to each other, while both were but aggravated forms of the ordinary fever of the country. Both had somewhat of an intermittent type; in both the pulse was at first but little different from the pulse of health; in both, head symptoms were extremely severe; or, as Sydenham said of the fever of 1684, " There is so great a tendency to a phrensy that it frequently comes on spontaneously of a sudden;" and in both coma often supervened. Lastly, in both eruptions appeared, which Sydenham divided into two classes, namely, petechiæ and miliary eruptions. "Sometimes," he says, "such spots as are termed miliary eruptions come out all over the surface of the body, appearing much like the measles, only they are redder, and when they go off, do not leave branny scales behind them, as in that disease.

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* Op. cit. p. 129.

† Lib. cit. Pp. 495—522. An Essay on the Rise of a New Fever.

It would go far towards proving the truth of the notion which it has been the aim of this paper to establish, if it could be shown that in any epidemic the rash disappeared while the other symptoms continued unchanged. Of this occurrence Ramazzini* has recorded a remarkable instance, presented by the fever which prevailed at Modena and the neighbourhood in 1692, and the two following years. The disease began about the vernal equinox of 1692; and gradually increasing in severity during the spring and until the dog days; "Sub peticulari larvâ sævitiem suam exercuit." When, however, the heat of summer set in, "Febris hæc purpuram deposuit, nec illam resumpsit," until the heat of summer declined. The same change was observed in the disease during the two following years, "Vestem quidem, sed mores ac genium haudquaquam mutans," for the absence of the eruption was attended by no diminution in the violence of the symptoms. The similarity of this disease, both in the symptoms which it presented and the circumstances under which it occurred, to that described by Fracastorius, is noticed by Ramazzini. It was more fatal in the city than in the country, was characterized by great and early prostration of strength, and severe head affection. There was considerable pain at the epigastrium, and disturbance of the bowels, and when to these symptoms hiccough was associated, the case was sure to have a bad termination. Suppression of urine was by no means uncommon. The very early appearance of the eruption was a bad sign, for the most part the spots showed themselves between the fourth and seventh day, being detected first on the neck, back, and chest, and appearing on the lower extremities in proportion as they faded on the upper parts of the body. Many husbandmen recovered perfectly without medical help, the eruption appearing on the seventh day. The spots are thus described: "Variæ autem ac diversi coloris erant prout varii ac diversi erant ægrotantium habitus; aliæ erant rubræ, aliæ pallidæ, aliæ fusci coloris; aliæ parvæ, aliæ latæ, aliæ in summo, aliæ in profundo, et quas nonnisi oculis transverse tuentibus liceret inspicere: quod genus peticularum fuit valdè ominosum."

Want of attention to the comforts of the soldiery was probably one reason of the frequency and fatality of camp fever at the end of the seventeenth and in the early part of the eighteenth century.

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* Opera Omnia Medica et Physiologica. Londini, 1718. Constitutiones Epidemicæ Mutinenses Annorum quinque, pp. 109—121.

Hoffmann[*] and Stahl[†] have furnished us with accounts of fevers prevailing among the German troops after their return to winter quarters. The fever described by Hoffmann occurred in the year 1683 at Minden, after the troops of Frederick William of Brandenburg had returned from Hungary, where they had been fighting the Turks. Stahl describes the fever which took place in 1689, likewise after the return of troops from Hungary, and the two diseases bore a close resemblance to each other. They were attended by great prostration of strength, severe head affection, and delirium. The early appearance of spots was a bad sign. Stahl says that they were of a pale rose colour, and usually showed themselves about the seventh day; sometimes they were accompanied by a miliary eruption. Gangrene of the extremities occasionally occurred; of which two instances are mentioned by Hoffmann.[‡] The same writer has detailed the particulars of other two epidemic fevers, one of which occurred in the year 1699, the other in 1728. Both fevers were attended by an eruption of petechial spots, which appeared, in the former, from the seventh to the ninth, in the latter, about the fourth day.

The epidemic spotted fever, which prevailed at Rome in the year 1695, affords a striking illustration of how slight a cause may suffice to modify the character and course of the disease. Lancisi[§] informs us, that in the middle of May and beginning of June tertian fevers prevailed in the suburbs of St Angelo. They did not bear bleeding, and ushered in pestilential fevers, some of which observed a tertian, others a continued type. The tertian form prevailed among those persons who lived near the fosses, while the disease ran a continued course in all who were removed from the hurtful influence of their exhalations. The tertians had a great tendency to assume the continued form, and about the fifth day intermissions usually ceased, and the eruption then appeared. Eruptions of spots, some red, others livid, likewise appeared in the continued fever, and both varieties of the affection were accompanied by severe head symptoms, and tended to a rapid termination, often proving fatal before the twelfth day.

The history of our own wars in the eighteenth century would furnish us with many instances of the varied forms under which camp and ship fever occur; but we must content ourselves with adducing but very few more facts in illustration of the position we have advanced. Sir John Pringle regarded camp and jail fever as but one disease, and, when enumerating their symptoms, does not omit to describe the spots very exactly, and to notice the great irregularity in the time of their appearance.[*] "There are," says he, "certain spots which are the frequent but not inseparable attendant of the fever in its worst state. These are less usual on the first breaking out in the hospitals; but when the air becomes more corrupted the spots are common. They are of the petechial kind, of an obscure red colour, paler than the measles, not raised above the skin, of no regular shape, but confluent. At some distance, the skin looks only a little redder than ordinary, as if the colour was uniform; but upon a nearer inspection the insterstices are seen. For the most part they are little conspicuous, and, unless looked for attentively, may escape notice. These petechiæ are very irregular, sometimes appearing as early as the fourth or fifth day, and at other times as late as the fourteenth. They are not at all critical, nor are they reckoned among the mortal signs, as they only concur with other circumstances to argue more danger. The nearer these spots approach to a purple colour the more ominous they are, though not absolutely mortal." Huxham[†] notices the frequent appearance of spots, and of an efflorescence like the measles, which showed itself principally on the breast. The eruption generally appears on the fourth or fifth day, though sometimes not before the eleventh day. Huxham's words are, "We frequently meet with an efflorescence like the measles in malignant fevers, but of a more dull and livid hue, in which the skin, especially on the breast, appears as it were marbled or variegated."

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[*] Opera Omnia. Genevæ, 1740, Tome ii. Sect. Prima, Cap. xi. p. 88.
[†] Collegium Causale, &c. Suidnitii, 1734, Casus 93.
[‡] Lib. cit. Tome ii. Cap. x. pp. 80—84.
[§] J. M. Lancisi, Opera Omnia. Romæ, 1745. Tom. iii. Lib. ii. Cap. v.

The fever which prevailed at Vienna in 1757[‡] presented greater regularity in the appearance of the eruption, and a more unvarying character than has been shown by most epidemics of typhus. Even in that, however, it is not difficult to discover many points in which it differed from the specific exanthemata. Thus, for instance, the period during which the eruption lasted was very uncertain, and two crops of it sometimes appeared. The disease commenced with catarrhal symptoms, pain in the head, lassitude, loss of appetite, and sickness. Frequently these symptoms were severe, even at an early period, and the prostration of strength was extreme. When the disease ran its course regularly, on the fourth, or at latest on the seventh day, "in superficie cutis emergebant stigmata rubra, læti admodum coloris cum levamine omnium symptomatum modo punctula sat parva æmulantia, modo late magis patentia, in collo, pectore, et cordis scrobiculo apprime conspicienda: mox per reliquum corpus et extremitates diffusa apparebant." Such was not, however, the invariable course of the disease, for the spots are said to have appeared in some cases on the seventh or ninth day. Hasenöhrl likewise gives the particulars of a case in which petechiæ appeared on the fourth day, and, at the same time, the patient complained of pain in the axilla; on the ninth day a second crop of petechiæ appeared; and in a day or two afterwards, an abscess which had formed in the axilla was punctured. The patient eventually did well.

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[*] Observations on the Nature and Cure of Hospital and Jail Fevers; in a Letter to Dr Mead, by J. Pringle, M. D. London, 1750, p. 20. See also Observations on the Diseases of the Army, by J. Pringle. Part iii. Chap. vii. and *passim.*

[†] An Essay on Fevers, &c. 2d edit. London, 1750, Chap. viii.

[‡] Historia Medica Morbi Epidemici sive Febris Petechialis quæ ab anno 1757, fere finiente, usque ad annum 1759. Viennæ grassata est, &c. Auctore J. G. Hasenöhrl, Vindobonæ. 1760. Apud Sandifort, Thesaurum, Vol. i.

A still more striking irregularity in the date of the appearance of the eruption was observed in the petechial fever epidemic at Mayence in 1760. Reuss,* one of the modern advocates of the opinion that typhous fever ought to be classed among the exanthemata, quotes from his instructor, Strack, an account of the disease, from which it would seem to have run much the same course as that just described. The different times, however, at which the rash showed itself were very singular. "On the ninth day of the disease," says Strack, "sometimes even later, there appear upon the skin spots which resemble flea-bites, but without any defined margin. These spots often come out on the seventh day; sometimes on the second day, immediately after the onset of the disease, sometimes they are visible from the very beginning of the affection."

The last epidemic to which we shall advert, is one which prevailed at Leipsic in the year 1799,† after an unusually cold and damp winter. Before the outbreak of typhus, all diseases had been observed to be characterized by uncommon prostration of strength; and, in May, catarrhal and rheumatic fevers, diarrhœa, and dysentery assumed many typhoid symptoms. The disease was ushered in by the ordinary symptoms of fever; but the pain in the head was extremely severe, delirium came on early, and the patients lay in a state of watching, unrelieved by sleep. Pain in the chest or abdomen often came on between the fifth and ninth day, and when the disease took an unfavourable turn the delirium became furious and incessant, subsultus occurred, sordes collected about the teeth, the tongue became dry and black, and the face, neck, and chest assumed a livid hue. Every symptom increased in severity, and the patient died in the second or third week from the outbreak of the disease. Eisfeld observes, that not only did eruptions of various kinds appear, but even in the same individual different sorts of spots were observed. Petechiæ, ecchymoses, miliary vesicles, and a rash, like that of measles or of scarlatina, are all noticed as having occurred in the course of the disease.

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* Wesen der Exantheme, Erster Theil, das Fleckenfieber oder die Kriegspest, von Dr J. J. Reus. Aschaffenburg. 1814, p. 37, note.

† See the description by J. Eisfeld, M. D., in Vol. vi. of Brera's Sylloge Opusculorum Selectorum. Ticini, 1806.

One case is described, in which, on the fifteenth day of the fever, an eruption broke out on the chest and upper extremities of a young man, which in some parts was like that of measles, in others more nearly resembled the rash of scarlatina.

During the time that plague prevailed in Europe, we have seen many instances of its being preceded by typhous fever which gradually put on the characters of bubonic plague. Dr Russell* mentions facts which show that the same occurrence takes place in those countries where plague is now endemic; and other instances of the gradual conversion of typhous fever into plague will be found on a perusal of the reports of the French physicians who attended Napoleon's expedition to Egypt. But lest we become tedious, we will content ourselves with merely alluding to these authorities, and, for the same reason we here break off the chain of evidence which has been brought forward to disprove the claim of typhus to rank among the eruptive fevers. The author is well aware that this evidence is very incomplete; but, to have adduced every fact bearing on the subject, to have employed every argument, and to have met every objection, would have required a book, and could not be attempted within the narrow limits of a paper. The medical records of the nineteenth century, though not adduced here, will be found to afford many powerful arguments in support of the opinion which the writer has advocated, and which is supported by many modern physicians of celebrity.

In conclusion, it may be well to recapitulate a few of the most important facts which bear on this question.

1*st. The disease often occurs more than once during the lifetime of an individual.*—We find Cardanus, one of the earliest writers on typhous fever, insisting on this point as a grand mark of distinction between it and measles. It would not be difficult to multiply instances of such an occurrence. Almost every person could furnish them from his own experience, while it is an extremely rare circumstance for any of the eruptive fevers to affect the same person more than once.

2d. The eruption is not invariably present.—In proof of this we have adduced the testimony of Riverius, and of Willis, who speaks of the disease appearing at first without spots, and afterwards assuming a spotted character. In the *febris nova* of Sydenham, spots were not invariably present, and Ramazzini expressly mentions their disappearance during the height of summer in three successive years without any other change in the character of the disease.

3d. The eruption does not always present the same charac-

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* A Treatise of the Plague, by P. Russell, M. D. London, 1791. Book i. Chap. iii. and v. and *passim.*

ter, nor does it always run a regular course, observing definite periods of increase, acme, and decline.—Of the varying characters of the eruption almost every quotation has afforded an illustration, and we have seen the date of its appearance vary from the second to the seventeenth day. Sometimes two crops of eruption showed themselves, and the consequences of its appearance, as well as the course which it ran, were very various. Further, the fact must not be overlooked, that the same eruption which appears in typhous fever occurs also in bubonic plague; whence it must follow, either that the two diseases are identical, or that the eruption is not pathognomonic of either.

4th. The type of the fever itself varies, being sometimes intermittent, sometimes continued, changing from the one to the other form, and being occasionally converted into other diseases.—De Thou, Bartholinus, Willis, Morton, and Lancisi, speak of the fevers observing an intermittent type, and the last three writers mention instances in which it gradually put on the continued form. Instances of typhus changing into plague, of plague changing into typhus, and of the same cause producing both diseases, are far from unusual; while the simultaneous occurrence of sweating sickness in the northern countries, and of petechial fever in those which are more southerly, is only one of many instances which might be brought forward, of the change which climate produces in the features of pestilence.

The author began his investigations with a strong prepossession in favour of the opinion that typhus ought to be classed among the specific eruptive fevers. Some of the reasons which have led him to an opposite conclusion have been very briefly set forth, and are now submitted to the judgment of those whom long experience has enabled best to appreciate the difficulty of collecting a body of authentic facts, and of thence deducing correct general principles.

ART. II.—*Practical Observations on the Diseases of Peru, described as they occur on the Coast and in the Sierra.*

By ARCHIBALD SMITH, M. D.

> Hinc procul extremis Americae in finibus, oram
> Aequoream propter, medius sol imminet urbi
> Quam dixere Limam: Phœbo propiore calentes
> Temperat aura dies, quæ frigida mane propinquo
> Spirat ab oceano: quam vespere lassa quievit
> Succedit variatque vices adversa, nivosos
> Quæ montes gelidosque madens præterfluit amnes.
> VANIERI, *Praed. Rust.* lib. 6.

—— Valetudo sustentatur notitiâ sui corporis, et observatione, quæ res aut prodesse soleant, aut obesse; et continentiâ in victu omni atque cultu, corporis tuendi causâ; et prætermittendis voluptatibus; postremo arte eorum, quorum ad scientiam hæc pertinent.—CICERO.

Introductory Remarks.—In my work, titled "Peru as it is: a Residence in Lima, &c." published in 1839, I have entered into some details regarding the climate, physical features, productions of the soil, social customs, institutions, and character of the inhabitants. In the present essay, I treat more especially of the Diseases of Peru, under the varying modifications which they present throughout the diversified climate of that country.

In order that my descriptions may be true to the life, I have in many instances adhered with scrupulous exactness to the expressions of the patients; and this peculiarity will account for the frequency of Spanish phrases in the text. In delineating the diseases of the coast, I am more diffuse; because these are of greater general interest in the varied features which they present, and also as my own observation and practice were more extensive on the coast than in the less closely inhabited regions of the Upland, or Sierra.

I do not always confine myself to mere general statements of practical results and observations, for, in many important instances, these might be considered more liable to be coloured by the possibly fallacious deductions or generalizations of an individual, than the detailed narrations of particular cases. It seemed to me, therefore, that I should be more likely to convey a striking picture of any particular disorder, by enumerating its symptoms as they presented themselves at the bed side of the sick, in a variety of particular appearances, leaving the reader to examine the evidence for himself, and thence draw his own conclusions.

The opportunities which I had of collecting the materials from which the following series of observations on the Diseases of Peru have been drawn up were exceedingly favourable.

At the silver mines of Pasco I resided for a whole year—being in professional charge of the English who were employed in the service of the Pasco-Peruvian Mining Company—and, as a matter of course, was often called to visit foreigners from all countries, and also natives, who resided at this seat of general attraction and national wealth.

Besides various journeys which I made through different parts of the Sierra, I may notice that, in the vale of Huanuco particularly, I lived for three years; during which I never failed to have opportunities of observing the pathological phenomena of that highly favoured inland district.

On the coast, I held for about five years, and up to the period of my departure from Peru, the appointment of medical adviser to the Hospital at Lima, for the cure of British and American distressed subjects and seamen. And, at the same time, I attended in private practice, not merely a wide circle of native patients, but likewise, especially during the last year and a half, or two years of my stay in the country, all the English and American mercantile and domestic establishments in Lima.

It is not pretended that the diseases of Peru are of a character essentially different from such as may be met with elsewhere. Neither is there, as native physicians often allege, any thing so peculiar in the climate of Lima, or in the delicate physical constitution of its inhabitants, as that the intelligent European, who directs his attention to the subject, may not be able to comprehend it. But, though the laws of the animal economy may be considered as uniform, or the same in every country—alike intelligible in the old and in the new world—yet, it is well known to every physician, that the particular type or character of any disease is more or less liable to change, when modified by the influence of peculiar climate, diet, and habits, or, by peculiar circumstances of time and place. Thus, we find that in the warm humid climate of Lima, the digestive organs and the nervous system are more remarkably affected than in the warm and dry valley of Huanuco, or in the cold and icy regions of the Andes.

The coast, in general, is less salubrious than the temperate heights of the inland country. In Lima, especially, the rate of mortality is very great, being annually about 1 individual in every 17. This is three times as great as that which prevails in our large English towns, as London or Manchester, where the mortality appears to have been reduced by improved medical practice and police to about 1 in 58.

The present rate of deaths in Lima may be caused, in part, by the anxieties and privations attending the late wars which have desolated the golden land of the Incas; but, independently of the cares, poverty, and demoralization inseparable from civil war, the white inhabitants of Lima have always been remarkable for their effeminacy or delicacy of constitution; and, as far as we can judge from existing records, the rate of mortality among the whole population of this City of Kings has always been such as is rarely met with elsewhere.

Lima is said to be a large hospital of convalescents, in which the least sickly of the inhabitants require to pay strict attention to diet, for fear of some serious attack of illness. There is nothing which they dread so much as preventing or disturbing the functions of digestion. Hence it is a very common precaution among them to avoid, for a moderate space before and after dinner, every thing that would agitate the spirits. They would not, for example, open a letter, or give admission to any serious communication, at those seasons. The great abundance of fruit and provisions often leads to disorder in diet. The women, in particular, eat all manner of indigestible things. When in ordinary health, the favourite rule is, *comer de todo*, to eat of every thing; but as soon as they feel really indisposed, they hesitate at every thing set before them, and will take no article of nutriment without inquiring —*No me hara dano?*—Will it not do me harm? These people begin and end their daily sustenance with chocolate, if they can afford to use it; and the supper of the genteel classes usually consists of some sweetmeat, a cup of chocolate, and a glass of water. Even during Lent, when fasting is enjoined as a religious duty, the feeble may be indulged with a cup of chocolate in the morning.

I shall not here enter into many particulars regarding the dietetics of Lima, of which I have treated elsewhere;* but I may mention that, in a Catholic city like Lima, where fish is an essential article of food, it is fortunate for the sick, as well as the sound, that, in this respect, they are very bounteously supplied by nature. It is remarked by Unanue that, "the fish caught on the coast are in general agreeable to the palate as well as stomach. The patient of least appetite and weakest digestive organs finds that the *pejerey*, *(Cyprinus regius)*, agrees with him, and so likewise do the *corvinitas* and *casonsitos*, *(Sciaenula Sparulus)*, which are commonly denominated milky, because they are very tender and of easy digestion."

On visiting the market-place in Lima, or, Chorrillos, during the bathing season, we find among the fish most esteemed by the natives, not only the *pejerey*, *corvinitas*, and *casonsitos*, which are recommended by Unanue, but many others of delicious flavour or excellent quality. Of these I may notice the *anja*, which is said to be as good as the pejerey; the chita; doncella, or snake-fish; pejēblanco; cabrilla or prawn; anchovitas; sardina, a large kind of anchovy; lenguado, or a sort of flounder; *mero*, or pollack, which is considered very tender and good; but of all their fish the *pampano*, *Sparus salpa*, is the richest and most prized. As fish that is eatable, but of inferior quality, they count the bonito *Scomber pelamis*; caballo or *Scomber hippos;* lorna; raya or ray; sierra or saw-fish; guitarra, so called from its resemblance to a guitar. They have also the tiburon, or shark, of which they make no use; and it is curious that this fish never attacks those who bath in the sea along the shores of Peru.

To show the great choice of fruits which the Lima physician may have at his disposal for the use of the sick or convalescent, it will be sufficient to name such as at present occur to my recollection.

Granada or pomegranate; Granadilla, the fruit of the passion flower; Peladillo or nectarin; apricots and peaches, especially the aurimelos, the finest and most luxurious stone fruit in Lima; cidron or citron; toronja, a kind of citron, of which the finest preserve is made; nispero or a species of medlar; lucuma, which is an extremely astringent fruit; olives; pacay; guayava; chirimoya, (*Anona reticulata;*) the most luscious of fruit; guanavana; palta,

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* See "Peru as it is."

Laurus Persea; plantains and bananas; grapes of various sorts; black and white figs; papaya; pears; apples; quinces; ceresas; ceruelas; palillos; capules; limes; sweet and sour lemons; sweet and sour oranges; musk and water melons; pepino; strawberries; Indian fig, or *tuna;* pine-apples. Dates, which are always at hand in a preserved state, are said to grow spontaneously on some parts of the coast, about Ica and Palpa, I think; and the mango, I am told, grows at Payta and Lumbayeque, from which places they may be conveyed to the capital.

The orchards of Lima always abound in fruit and blosom; and we may say with a classical Limeno, the late Dr Joseph Emanuel de Davalos; "Magna per noctem aëris condensatio, illam reddit valdè rorisfluam, hinc enim ùt arbores foliis omnibus simul non orbentur, sed, parte unâ decidente, altera adhùc maneat, donec prior repullulet, et plurimæ quidem, toto anni tempore, flores et fructus producant."[*].

Irriguis ergò Pyrus altera floret in hortis,
Altera curvatur fructu; maturaque nullo
Tempore deficiunt sitientes pomà colonos;
Dumque solum movet, aut sarmenta fluentia cædit
Vinitor, hinc dulces in eisdem sepibus uvas
Colligit, hinc vitis captat florentis odorem.
VANIERI, *Praed. Rustic.* lib. 6.

Wherever there is water for irrigation, there we meet with perpetual verdure on the coast. But it should be borne in mind, that the maritime plains of Upper and lower Peru, which extend from the southern tropic to within two or three degrees of the equator, constitute an arid, sandy, and unproductive desert, except in the inhabited parts in the neighbourhood of those rivers which descend from the snow-clad mountains of the Andes.[†]

So completely is this line of coast in general refreshed from the mountains and from the sea, that the summer heat of the lowland valleys rarely exceeds 82, or, the winter cold 60 degrees of Fahrenheit. But along the northern shores of Peru, that is, in the province of Piura, the temperature of the air of the atmosphere in summer ranges from 80 to 96, and in winter from 70 to 81 degrees of Fahrenheit.

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[*] See p. 8 of Specimen Academicum de morbis nonnullis Limæ grassantibus, &c. By J. E. De Davalos, 1787.

[†] The sterility of such parts of the vale of Rimac as have not the advantage of water for purposes of irrigation, I have had occasion to notice in "Peru as it is," "But," says a reviewer of that work, "there is another cause which is operating slowly, but with unremitting energy, and threatens ultimate desolation. We mean the sea-sand, which is marching incessantly before the trade wind. Already it has surmounted the lofty hills which form the southern boundary of the beautiful valley of Lurin, and is coming down in large waves upon the cultivated ground. The same is observable on the elevated plain which is called the Tablada, where the tops of the hills appear like Egyptian oases, and from whence the sand is pouring down in enormous masses, on the sugar plantations of San Juan and Villa, in the valley of Rimac." See Review of *Peru as it is*, in Blackwood's Edinburgh Magazine for March 1839.

The seasons are divided into wet and dry: the former begins, on the coast, in May, and ends with October; and the latter, of course, lasts for the other six months of the year. But what is called the *wet* season is not properly so termed; for they are only mists that prevail during this period, and a shower of rain is truly a most rare sight. On the coast and on the mountains, the seasons are so opposed to each other, that when it rains in the inland country in torrents, it is perfectly dry weather on the coast; and, on the other hand, during the *garua* or mists on the coast it is dry and sunny on the mountains. This curious contrast, observable in places within sight of each other, is of great importance to the sick; since, in consequence of this arrangement, they can at all times change climate and season, by merely travelling the short distance of a few leagues.

Throughout summer the south wind blows in balmy breezes; but the prevailing wind for nine months in the year is the south-west.

It is justly remarked by the reviewer already quoted, who is evidently intimately acquainted with his subject, " That gales of wind never reach the shores of Peru, or, to use the nautical expression, they do not blow home. O, it is beautiful to stand on a promontory, and look out upon the sublime Pacific rolling its awful surges in thunder on the beach, while all beyond those stormy ridges is smooth and blue, and birds are basking on its surface, and there is not a wave to waken them from their slumbers."

In treating of the temperature of the Peruvian coast—Peru as it is, Vol. ii. p. 206—I had occasion to remark that, from the southern tropic to close upon the line, there is a progressive diminution of atmospherical humidity. And upon this observation the reviewer in Blackwood offers the following comment; " This phenomenon may be explained, we think, by the fact, that the breeze which prevails along the whole of this coast passes, with the exception of a few and comparatively narrow valleys, over nothing but hot sandy deserts, and, of course, is continually losing more and more of its moisture, until, as it draws near to Tumbez, it begins to be saturated with the damps which for ever hang upon the equator. If the prevailing wind were from the north instead of the south, the whole coast of Peru would be a continuous forest." This explanation of the progressive humidity referred to appears to be satisfactory, on the existing data of the whole coast being hot sandy deserts. But the singular peculiarity remains to be explained—why those very plains which extend between the mountains of the Andes and surges of the Pacific should be naturally arid deserts, which are never or almost never visited with rain?* I shall not indulge in speculations on this subject, regarding which many conjectures have been offered by various authors.

I may conclude these preliminary and general remarks by observing that, though the common effect of the too equable climate of Lima is to enfeeble the constitution, and render the inhabitants *lazy*, yet to no climate is Homer's description of the Elysian fields more applicable. To this circumstance I alluded on a former occasion; and in the article already referred to in Blackwood's Magazine for March 1839, we have the original passage, with two elegant translations, superior to Pope's, which I shall, without offering an apology, introduce in this place.

Τῆ περ ῥηίστη βιοτὴ πέλει ἀνθρωποισιν,
Οὐ νιφετός, οὔτ᾽ ἀρ᾽ χειμὼν πολυς, οὔτέ ποτ᾽ ὄμβρος,
Ἀλλ᾽ αἰεὶ Ζεφύροιο λιγυπνείοντας ἀήτας
Ὠκεανὸς ἀνιῆσιν ἀναψύχειν ἀνθρωπους.—Odysseias, δ. 542.

No child of labour there, with feverish head,
Bends o'er his task and scarcely gains his bread;
But the glad earth, through all the smiling hours,
Unwrought by man, its genial tribute pours;
Stern winter frowns not there, nor snow, nor rain
Deforms the sky or desolates the plain;
But sea-born zephyrs, ever on the wing,
Round the blest bowers eternal freshness fling.

Or thus,

There, without toil, man spends his blissful hours;
No snow—no rain—and winter scarcely lowers;
But ever zephyr's gently-breathed air
Ocean sends forth, to cool the dwellers there.

General Arrangement.—The diseases of Peru, comprising those of the coast and inland country, may be arranged under four principal heads, namely: I. Diseases of the coast in general; II. Diseases of the elevated pasture grounds, and cold mining districts situated in the vicinity of the great chains of the eastern and western Cordillera; III. Diseases of the intermediate, warm, and temperate valleys, situated between the eastern and western Cordillera, or, between the western Cordillera, and the headland quebradas, or glens of the coast; IV. Diseases of the Montana, or the missionary territory and widely extended forest land on the eastern frontiers of Peru. Regarding the most prevalent disorders embraced under each of the four chief parts now specified, I shall offer some practical observations.

I.—DISEASES OF THE COAST.

1. *Seasoning-Illness.*—The general enervating influence of

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* As an exception to the general rule it may be noticed, that the years 1701—20—28—91 were remarkable for heavy rain in the valleys of the coast. See Unanue, Sobre et Clima de Lima, p. 29.

the climate of Lima, and of the coast generally, the natives usually express in their own happy way, on beholding the ruddy European who visits their shores for the first time, by such a vulgar phrase as, "dejale, luego caera"!—in other words, never mind him, he will soon be as pale and delicate as ourselves. So usual, indeed, is it for foreigners to be attacked by some sort of acute disease shortly after their arrival on the Peruvian coast, that the expression *chapetonada*—in allusion to *chapetones*, or the natives of Old Spain so called, is a familiar epithet, applied to the seasoning fever, or first severe illness which happens to affect the European.

The character of the seasoning illness, to which all strangers as well as Spaniards are liable, varies with circumstances; for on the coast, every revolving season is accompanied with its own characteristic diseases. Thus, about the end of March, or at the time of the autumnal equinox, it drizzles more or less at night, and the evenings and the mornings become sensibly cooler; and with these changes in the atmosphere ague usually shows itself, especially in the sea-bathing stations, which the fashionable visitors from the neighbouring towns take care to desert on the very first appearance of this disorder.

2. *Of Intermittent and Remittent Fevers.*—The autumnal fevers are often severe, and during the months of April and May they are exceedingly prevalent.

The type under which these fevers most frequently appear is allowed to be the tertian; and hence the natives, very indiscriminately, call intermittents, whether of quotidian or tertian form, by the vulgar name *Tercianas.*

In those parts of the Peruvian coast which approach nearer to the equator, fevers of this nature are milder than in other and more humid situations that lie to the south of Lima; but everywhere along the maritime valleys, if the case be left to nature, visceral obstructions and dropsies naturally follow protracted agues.

About the middle of April, the periodical rains nearly cease in the mountainous districts, and, consequently, the rivers on the coast begin, at the same time, to fall rapidly. Now it is that the marshes in the neighbourhood of towns and villages partially dry up, as the supply from the seasonal rains of the inland country disappears; and from these marshes and the canals for irrigation, (whose slimy channels are more and more exposed, as the volume of water flowing into them from the great streams or rivers is diminished,) miasmatic matter and a pestiferous stench are emitted.

Owing to such causes, the sea-port town of Pisco used to suffer very much from *tercianas* (as the sea-port of Callao still does, on account of the neglect of drainage,) till the year 1834, when the inhabitants of this town, as one of them informed me, resolved upon opening a wide drain or canal round the place. The result of this useful labour was, that the drainage became complete; and on the following year there was little or no terciana in Pisco.*

Intermittents are often observed to come on masked under a continued or remittent form; and on some occasions they are complicated with a local inflammation, as acute hepatitis for example, of which such fevers may at first appear to be only symptomatic. They do not discover their natural type or tendency for a few days; and hence the current saying among the natives,—"todavia no se ha declarado la terciana," viz. the tertian has not yet unmasked or declared itself.

In the months of April and May a great number of masked cases are observed to commence with symptoms of common catarrh, repletion, or constipation (Empacho); and after free alvine evacuations are procured, such affections usually declare themselves, and appear in the undisguised form of an established tertian or quotidian; or, if the fever was remittent in its commencement, it then takes on the regular intermitting type.

The general treatment of ordinary tercianas I shall notice before offering any observations on the management of more urgent cases.

In the cold fit of the milder forms of such fevers, the natives seldom do more than wrap the patient well up in bed-clothes; give some warm diluent drink; and apply warm bottles, bricks, or flannels to the feet. In the cold stage I have often given an opiate with decided advantage, and in the hot stage have had recourse to opiates conjoined with *Liq. Acet. Ammon.* which produced the desired effect of quieting nervous irritation and promoting sweat; but these remedies are little if at all used, under similar circumstances, by native practitioners.

In the hot stage cold drink is importunately desired by the patient; and iced-water, with or without the addition of acidulating vegetable juices, is in general safe, and may be considered the most grateful and salutary beverage that can be given, except in cases of acute internal inflammation, in which, as experience teaches, such frigid draughts are inadmissible.

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* The advantage of drainage in preventing disease is well illustrated by the observation of a gentleman who had resided for several years at Arica, on the southern coast of Peru. He says, "In former times, the water from the mountains was allowed to find its way to the sea, by running along the almost level ground in the vicinity of Arica. The consequence was the formation of a swamp, whence exhalations rose, bearing disease, misery, and death to the victims of resistless arbitrary power. When the patriots first got possession of Arica, they cut a considerable ditch or channel on the north side of the town, to let the water have free course into the sea. The place was greatly improved, and rendered much more salubrious during the interval of time that elapsed between the period when the above-mentioned improvement was effected, and the reoccupation of Arica by the Spanish loyalists, who, with diabolical ingenuity and perseverance, filled up, or otherwise destroyed the canal, and again Arica became what it had been for centuries before, very unhealthy."—See in Glasgow Medical Journal, No. xix. August 1832, an article on the Medical Topography of some parts of Peru, relative to Dysentery and Intermittent Fever, by Mathie Hamilton, formerly Surgeon to the Potosi, &c. Mining Company.

These iced drinks are known to quiet the feverish restlessness and oppression at the præcordia, that usually accompany the hot stage, and they soothe the general nervous excitement, together with the mental uneasiness and despondency which frequently concur to render the hot stage of an intermittent the occasion of a peculiarly distressing state of disturbed sensation and feeling. Such cooling drinks are found, as confirmed by daily and common experience, to reduce the excessive heat and excitement of the internal organs; to moderate thirst, relax the exhalents, and favour perspiration. As the excessive irritation on the internal surfaces is allayed by the sedative action of iced-drinks, this change is soon followed by the sympathetic relaxation of the cutaneous vessels, which opens the way to free and general diaphoresis, that cools the body and terminates the paroxysm. It will also be observed, during the warm summer months, that when the excitement and fever run high, perspiration is invited by light covering, while on the other hand, a load of bed-clothes would only serve to increase the restlessness and oppression, and retard the out-coming of a refreshing sweat, which prepares the patient for taking the infusion of bark, aided by some neutral salt. In some cases the bark may be dispensed with, for drinks of mallow decoction with cream of tartar, and the repeated administration of laxative enemata, are popular and frequently efficient remedies in common terciana.

After the solution of the entire paroxysm, some feel quite well and ready for a good meal, while others experience the utmost degree of lassitude, and feel little or no relish for food.

It may be observed regarding those affected in the latter manner, that, from some peculiarity of constitution, the nervous excitement which accompanies the fever is particularly intense, so that, unless active measures be early resorted to in the state of apyrexia, a few repetitions of the fever will greatly exhaust the sufferer.

Though the routine practice in Lima during the paroxysm of a common *terciana* be such as is here described, there occur numerous instances where fevers, essentially of this nature, do not run so regular a course, and in which, without the preliminary measure of bleeding, either before or during the exacerbation, cold drinks fail in producing a copious sweat, and a consequent termination of the fever. Of venesection during the cold fit, I have no experience.

In those severe cases where the vascular action and fever are intense, it will be commonly found that the treatment should begin with a general bleeding, to which, in most instances, the warm bath will prove an agreeable and efficacious auxiliary. Thus, when the patient is young and vigorous, the pulse strong and frequent; the skin dry and hot; and the fever attended with parched fauces, thirst, and an inward sensation of heat, or with a short and troublesome cough, which passes off with each successive paroxysm,—in such circumstances the lancet may be usefully employed. When the breathing is greatly oppressed, with the neck and countenance unusually turgid, general restlessness excessive, and the mind anxious, or the thoughts incoherent, abstraction of blood is urgently required, and cannot be omitted without hazard to the sick.

In those attacks where the fever has not unmasked itself, but has remained in a slightly remittent or continuous state for several days, and appears in company with some local inflammation, it is usually treated as if it were merely a sympathetic inflammatory fever. It is, however, remarkable that, on the elevated inland plains, the inflammation of some organ, we shall say the liver for instance, should only be attended by a continued inflammatory fever, while on the coast, during a season of aguish epidemics, it is mostly sure to be accompanied with a fever which, though continuous at its onset, yet in its course, after depleting and evacuating means have been used, is disposed to assume, and generally does, the intermitting or remitting type. Hence, we may infer that, to produce an intermittent fever something more than local inflammation is essentially necessary: for these do not stand to each other in the positive relation of cause and effect. On the table-lands, ague is never known to originate, though inflammatory ailments are there most common; and, on the coast intermittents and remittents are very common, without presenting any evidence of a co-existing local inflammation, though on some occasions these affections are conjoined.

There scarcely ever appears an acute disease in Lima which the women, who are exceedingly dexterous in the use of the Jeringa, or syringe, do not attack by clysters; and these during the intermission of fever are often resorted to with very beneficial results.

Emetics are seldom used except when the stomach is supposed to be in a foul state; and as the larger intestines are more usually considered in fault than the stomach, the vulgar attempt to relieve these by a very liberal use of enemata.

This administration of clysters is to a certain degree countenanced by those practitioners of the capital who, in direct opposition to the method commonly approved and followed by native practitioners of the highest reputation, make little use of purgatives in fevers of whatever denomination which happen to be attended with considerable excitement and vascular action; but who rather trust all to oily and emollient applications to the belly, with diluents, injections, warm baths, and the lancet.

After eight or ten days illness, should the patient, under this mode of treatment, begin to get better, and should the bowels come to unload themselves freely and without the help of purgatives, these gentlemen say, and say truly, "el enfermo evacua porque sana, y no sana porque evacua," that is, the patient's relief in his bowels is the consequence, and not the cause, of his recovery.

But it is nevertheless true, that, if such practitioners could only be prevailed upon to throw off their speculative notions derived from books and not from practice, as to the irritating effects of purgatives in cases of fever in general, and to release the bowels in the commencement of the attack, from the load of unhealthy deposit with which they are very usually incumbered in cases of intense fever, their patients would not fail to rejoice at the advantages gained by this practice. It will be found in a large proportion of cases where the skin is dry and hot, and the fever of a continued or lightly remittent type, that nothing tends more than the discreet and early use of opening medicine, to relax the skin, and enable the existing fever, without any unnecessary procrastination, or waste of blood, to assume a milder and intermitting type.

Purgatives, as well as bleeding, are generally indispensable for the proper treatment of those forms of remittent and intermittent fever which are vulgarly called "*Tercianas en la Cabeza*," or tertian in the head. In these affections, delirium or great drowsiness, and bilious vomiting attend the exacerbation; and in some cases, particularly where the patient is of a corpulent habit, the disease is ushered in with bilious vomiting and a comatose state, which (until a doctor arrive to give assistance) the women attack by common purgative clysters and cooling drinks. By such means, they often succeed in aiding nature to bring about a free sweat, which either terminates the paroxysm, or affords the patient a longer or shorter remission. But each successive paroxysm which returns with delirium or comatose symptoms, endangers the brain more and more; and when by the prompt administration of purgative clysters (emphatically called "Ayudas," or helps,) and blood-letting, either general or local, the perilous determination of blood to the head is counteracted, and after this, vomiting stopped by iced refrigerants, according to the vulgar method, the first quiet interval should be used to give some suitable purgative. And thus it will be found that those disorders with well-marked cephalic symptoms are commonly reduced to a very manageable state, and yield readily under the ordinary remedies; bark in substance or infusion, and quinine.

The watery infusion of the Peruvian bark, called by the natives "*la tintura de la quina*," is in general a most suitable remedy during the intervals or remissions of intermittent and remittent fever; and when the stomach is irritable, this infusion is far more eligible than sulphate of quinine, which is sometimes, and particularly when long-continued, found to irritate the stomach very much. It is a prevailing opinion among native practitioners that relapses are more apt to occur after an attack of *Terciana* has been removed by the sulphate of quinine, than when it has been stopped by the native bark, whether taken in powder or infusion.

When quinine is ordered (after the bowels have been sufficiently attended to) cooling lemonades at the temperature of the air are drank after each dose; or aperient beverages, such as cream of tartar in tamarind water, made agreeable with sugar, are preferred. Many of the natives are very partial to cold water and sugar, which they use by dipping a piece of sugar in the water, and slowly sucking or sipping at it till they have taken what they consider sufficient allowance. This they consider very refreshing, and have recourse to it in most cases of fever whether they use quinine or not.

When quinine is given in form of pills, it may be worth while to recollect that these are often observed to pass through the bowels in an entire state, and, therefore, fail to effect the purpose for which they were given.

In many cases in which there are no distinct intermissions, an infusion of bark with the addition of a mild neutral salt, as sulphate of magnesia, answers every useful purpose; and in those instances where the intervals are complete, this combination of the bark and evacuant saves time, and is very appropriate.

It occasionally happens that after frequent relapses of a regular quotidian or tertian, the abdominal viscera become unusually irritated; the spleen or liver, and sometimes both, appear enlarged; and the fever, which now changes its type, becomes a severe remittent, or perhaps a stubborn quartan.

Where the disease from a more simple, thus took on a severer form; for example, when an intermittent had terminated in a remittent, I have witnessed the intestines in a torpid state, and at the same time puffy and inflated, whilst the head was much affected, and the mental faculties disturbed during the increase of the fever. In this state the patient's strength sunk, and the flesh rapidly fell away under the wasting force of a burning fever relieved by no cooling sweats. But mild mercurial inunction applied to the belly, soon affected very mildly the gums and salivary organs; and then all bad symptoms ceased. The secretions were improved, and perspiration was copious, though by all the variety of means previously resorted to, according to the particular views of different medical men, the cutaneous vessels could not be sufficiently relaxed. After this, no more remained to be done than to carry off the offensive contents of the bowels by the mildest laxative,—manna dissolved in whey, repeated once or twice in the twenty-four hours, and thus a perfect recovery was obtained.

I have also found mercurial inunction prove most efficacious in ague complicated with hepatic obstruction, ascites, and great dilatation of the intestines; and of the treatment of ague and dysentery conjoined, I shall have occasion to take notice hereafter.

The above practical remarks are applicable to those fevers usually designated under the vulgar name *Tercianas.* But yet, as such are known to appear under many varieties of character, to be removed by a diversity of remedies, and in some cases to present much resistance to all ordinary methods of treatment; I shall offer a few observations, to show what are the chief deviations from the most usual and regular appearance of those fevers of intermittent or remittent type.

When the fever is slight and without any well-marked gradations or stages, but returning at noted intervals, it is called *terciana boba*, or silly tertian. This variety sometimes presents itself with evening or nocturnal fever, accompanied with a good deal of headach. It is cured like ordinary and regular intermittents.

There is a sort of periodical *hemicrania*, which is of an intermittent nature, observing quotidian or tertian periods; and it yields to open bowels and bark, or Fowler's arsenical solution.

On some occasions the *terciana* is said to be seated in the stomach, *terciana en el estomago.* This particular appellation is given to those cases, where, during the exacerbations, or throughout the whole course of the fever, the gastric symptoms are the most prominent and urgent. Such cases may require, when the stomach is the seat of acute inflammation, to be in the first instance treated like *gastritis;* but, as in almost every case of this nature, the attack will be found to come on with the bowels more or less loaded, it will be proper from the beginning to follow the usual native practice of clearing out the intestines by moderately purgative clysters, and when the state of the stomach admits of it, a mild purgative may be given with the best results. Should the gastric symptoms subside greatly, during the intermission of a quotidian or tertian, the disorder may frequently be removed safely and readily by the infusion of bark with the sulphate of magnesia, and cooling drinks, such as lemonade, pine-ade, and tamarind-water, &c.

Terciana en el ojo, or tertian in one eye, is very particularly distinguished, and its presence is announced when an eye is the chief seat of uneasiness during the febrile and periodical paroxysm. In such cases, all round about the eye appears livid after a tertian fit is over, or the eye may only look red and turgid.

This affection is sometimes treated as merely a local disease, and consequently becomes protracted and distressing, and by bleeding and purging, the patient is in such cases unnecessarily reduced. By giving quinine or bark during the intermissions, and attending to the bowels, this variety of terciana is readily removed.

Children at the breast do not always escape very troublesome agues, which are generally cured by dieting the nurse. Tincture of quinine is frequently, and sometimes with good effect, applied externally to the child by gentle friction.

In orchards round town, older children who are capable of helping themselves to fruit, and allowed to play in the humid or shaded parts of these enclosures, suffer greatly from agues. Among these little patients more particularly, though like cases may also be seen in the city, are some quite jaundiced, and others are seen with ague-cakes very painful, at times, to the touch, during the heat of a paroxysm. In those affected in the latter manner, the vomiting is frequently very severe, beginning in the cold, and continuing through the hot stage, and the type itself is irregular and changeable; at one time quartan, at other times tertian or quotidian.

I have been called to see a child who for four days had laboured under a double quotidian, leaving a distinct remission. By means of a laxative clyster to begin with, followed by an emetic, which was succeeded by a mild opening medicine and mallow decoction for drink; and by means of the warm bath when the fever was highest, or skin hottest, the fever assumed the type of a regular quotidian ague: each exacerbation ending in a general sweat. But, at first, until the bowels were cleared out and regulated, the general state of the skin was dry, the patient having only slight partial sweats after each return of exacerbated fever, attended with burning forehead, headach, and drowsiness. The case, once changed in type, easily yielded to quinine.

In Lima, I was called to attend a young man from Chili, who was attacked by semitertian in consequence of gigers having entered his toes; the local irritation excited by these insects having induced sympathetic glandular swellings in the groin, with fever terminating in semitertian. Every day there was an exacerbation, but only every other day a perfectly formed paroxysm, consisting of cold, hot, and sweating stage. The fever continued after the gigers were extracted or destroyed, the wounds occasioned by them healed, and the sympathetic swelling resolved; but in two or three days it was removed by the common bark infusion, with the addition of a neutral salt, which served to keep the bowels open. And it may be noticed by the way, that it is rarely requisite, with a view to restrain excessive alvine dejections, to conjoin opiates with the infusion of bark in the *tercianas* of Lima.

I have known a stout woman, of mixed Indian and European blood, who never had an attack of ague unless it was occasioned by anger; and having first commenced on the coast, it afterwards came on indifferently, whether on the coast or in the elevated villages of the interior. A fit of choleric or angry passion always brought on a relapse, which she was accustomed to remove by ordinary clysters, followed by the bark infusion with Epsom salts.

I have known an Indian farmer, of herculean strength, who, when attacked by *tercianas*, derived no benefit from the regular prescriptions of the faculty, but was always cured by ordinary clysters and a dram of aguardiente or pale brandy. Many are cured of obstinate agues by the juice of sour oranges. It is firmly believed by the natives that relapses are sure to be caused by drinking milk; and therefore no quantity of milk, however small, is allowed in tea or coffee taken by the aguish patient.

Some persons affected with *tercianas* are always injured by bark, and cured by ices or cooling acidulated drinks; but these individuals take good care to clear the bowels with clysters, or perhaps a mild laxative, before ices are resorted to, or considered safe. Others there are who, after their bowels have been acted upon by clysters, are accustomed to take an emetic, and then they trust the rest to diet and *frescos*, or cooling beverages.

I have known a beef-steak dinner, with a good allowance of port wine after it, cure a chronic ague. But this is a remedy that often does more harm than good; for when it does not cure quickly, it seldom cures at all, and may increase those visceral disorders which are frequently attendant on obstinate quartans, in which, more good may be expected from blue pill than generous living.

It is related of a physician who long practised in Limá, and was subject to a slight *terciana* for twenty years, that when it left him he only survived a few days.

I have conversed with a respectable ecclesiastic of the same city, who, after having long suffered from a tertian that baffled the skill of the faculty, was at length cured by applying some sweet-smelling flowers to his nostrils, as soon as he felt the usual precursory uneasiness at stomach and chilness disconcert his frame. The writer stopped this disorder in his own case by employing the vapour-bath in the cold stage, and so forcing a sweat. Not a few have been cured of long continued ague by bathing in the sea during the cold fit.

Obstinate intermittents contracted about the period of the autumnal or vernal equinoxes are many times cured by sea-bathing, after all other remedies have failed. Sometimes a voyage to Chili is undertaken with a view to fortify the constitution, and insure a permanent recovery. A journey to the interior of Peru is not found to answer the same purpose; and in the frigid mining districts, the bilious vomiting is very severe during an attack of ague. I once, when long out of health, with a frequently recurring quotidian, undertook a journey to the interior and temperate valleys, but did not find that this change of climate rendered the fever less apt to return, though it increased the general tone of the system. But I experienced that, while it had the effect of strengthening the cold stage, the bilious vomiting and gastric disturbance were much less in these temperate situations than on the coast, where the cold fit is sometimes but faintly marked, while the hot fit is long and distressing. In Lima, it is understood that delicate persons, and such as are subject to relapses of *tercianas*, should take refuge during the winter in the neighbouring village of Chorrillos.* Such, indeed, is the general liability or propensity to *tercianas* in Lima, and especially in that part of it called the Cercado, at certain seasons, that, when these prevailed epidemically, I have observed a fever which preceded a general eruption of urticaria assume the intermittent type. And patients debilitated by other diseases, while going about as convalescents, are very often seized, particularly if they commit any irregularity in diet, with some form of intermittent. But, to conclude these observations, relapses of ague are so common, from the slightest causes of change in the warmth of the surface, however induced, whether arising from changes in dress, or different states of the atmosphere, that it appears nothing is more essential to complete convalescence, or necessary to guard against relapses of the disease, than keeping up an equable warmth of the feet and surface of the body.

3. *Bilious Remittent.*—The bilious remittent fevers prevail most in Lima and on the coast generally, during the sultry months of January, February, and the earlier weeks of March, when they are very formidable, though some severe examples of this kind are also observed to occur about the time of the vernal and autumnal equinoxes, when intermittents are abroad in every street, and often put on, as already observed, the disguise of a continued or remittent fever during the first few days of their attack.

In progress of treatment and cure even the more intense remittents, with decided bilious character, which prevail during the warmer months, frequently dwindle into a tame quotidian or tertian form: but in general their features are sufficiently peculiar and well-marked, and they deserve separate consideration.

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* See Chorrillos described in "Peru as it is," Vol. i. p. 90.

I shall relate a few cases by means of which accurate notions of these fevers and their common transitions of type may be conveyed to the reader; and to give a fair account of such cases I rather choose to be somewhat minute than to pass over details with great brevity.

CASE I. A young man, native of Lima, and engaged in commercial pursuits, had occasion in spring, (in the month of October), to ride to Callao, and there he dined on beans and salad, and immediately after drank a few drams of the spirit of the country, called Aguardiente, which was medicated with anise-seed. After all this, in course of the day, he rode back to the city, and at night he felt feverish. Next morning I was called to visit him, and on my arrival the fever had remitted, but the patient and his attendants agreed in stating that it had been very sharp over night. On examination it appeared that the colon was greatly inflated, forming a large sensitive tumour, where it traverses the right hypochondriac region. His tongue was foul, and of a yellowish appearance; his alvine motions were frequent and bilious, and he had occasional vomiting of a bitter or bilious fluid. Caldo, or mutton-tea, his stomach rejected, and it was only such farinaceous articles as rice-pap or arrow-root that would rest upon it. Several emollient enemata were administered by the female attendants.

Having found him as described, I took advantage of the existing remission, and prescribed, for immediate use, a bolus of conserve of roses, with eight grains of calomel, as an appropriate purgative in the irritable state of the patient's stomach.

This evacuant carried away copious bilious stools, and produced great relief; for vomiting entirely ceased, and the stomach became so far quieted as to bear *caldo* without nausea or inconvenience; the distended colon sunk to its usual level, and no longer simulated an enlarged liver, as it had done on the preceding day; perspiration flowed easily, which it did not till the bowels were acted upon by the calomel; and the result of all these changes was that the fever quickly assumed the intermittent form. After this transformation the accessions continued to be nocturnal; but these were mild, short, and few in number: they were ushered in by a pain that darted along the right shoulder.

The young gentleman was kept for a few days on spare diet; and was allowed lemonade or tamarind-water for common drink. The fever was soon removed by the infusion of bark, to which was added as much sulphate of potash as served to regulate the daily action of the bowels.

CASE II. A Serrano or mountaineer trader came, in the month of February, to one of the taverns or *Tambos* in Lima, where muleteers and traders from inland districts usually take up their quarters.

For the first four days after his arrival in town, he kept beating about the streets, and making such purchases as suited his purpose, in course of which he was necessarily exposed to the sun, strongly reflected from the walls and pavement. During these busy days he experienced a good deal of thirst; and while his *peones* or servants indulged in succulent fruits, he himself eat daily one of the very large melons, so common in the capital at this season of the year, as a cooling accompaniment to a fair allowance of cheese and other dry food, as "cancha and charqui,"* &c. to which men of his mode of life are much used among the hills.

On the fifth day of this sort of living and exertion, he was seized with strong flushing and slight chills, which lasted all the first day of his illness; while, for several days after, he always felt great oppression, weight, and tightness about the epigastrium and belly generally. At the same time his tongue was furred and yellowish; nausea frequent; thirst excessive, and call for cold water urgent; but his nurse was afraid to let him have it; his left eye was bloodshot, and the whole left side of the head ached severely; his skin continued to be, as he expressed it, burning hot for several days; the urine was very high coloured; belly bound, and several laxative or emollient enemata were administered at the suggestion of the female attendant, without adequate relief. Each successive night his agitation, anxiety, and fever rose to a degree that approached to delirium, and his extreme restlessness continued till the coming on of dawn, when, without having sweated, though the skin became somewhat humid, the violence of the fever declined.

Things were stated to have remained so for three days before I saw the patient, and at my first visit, I found him with a strong accelerated pulse, and very considerable fever; yet, judging from the narrative of his case, his fever was at this time in a state of comparative calmness or remission, and the evening exacerbation was expected to recur in the course of three or four hours after. No time was to be lost in the treatment of the case. Enemata had already proved unavailing; and therefore the bowels, in which the disease appeared to have originated, required to be unloaded by some other means without delay. The lancet should here have taken precedence of the purgative; but there was an obstacle, which will immediately suggest itself to the native practitioner, viz. the *empacho* or surfeit of melon and cheese, &c. for it is a rule among the vulgar never to consent to be bled when their bowels are loaded, or supposed to be so with feculent accumulations; and hence this patient was not bled.

A dose of compound powder of jalap, mixed in tamarind and mallow-water, was given, and in less than two hours it procured a free discharge of five abundant and thin, but feculent, motions of a yellow colour; and, being then allowed a basin of weak chicken soup, he voided, in course of the evening, eight or nine more stools, which had precisely the appearance of dark-jaundiced urine, without any trace or admixture of mucous or feculent matter interspersed. The patient, after this copious discharge from the bowels perspired profusely all night, and next morning he had neither fever nor hemicrania, but the tongue remained yellow and furred. Since the free perspiration commenced, there were no more stools, and conceiving it probable that the fever would not return, the patient was only directed to alternate linseed-water with a thin and watery chicken soup, or "*caldo de gallina*," in the usual manner. But, on the day following, when the patient was again visited, he related,—"Yesterday, at four in the afternoon, I was overtaken, when I little expected it, by feverish heat, much thirst, and an inward heat of the belly, which was removed by the interference of my kind nurse, who anointed the whole abdomen with rose-ointment and almond oil. After this, I felt much wind in the bowels; and of this sort of disturbance I was also relieved by an enema of alorba, (*Fœnum græcum*) linseed, and sugar, with the addition of a little rose-oil, but without voiding by stool any thing to signify. I perspired in the early part of the night, but not freely, nor so as to refresh or cool me. At midnight, the fever ascended to a high pitch. The upper half of my body perspired somewhat, but the lower half perspired none; and in the feet there was a burning heat. One eye and half of my head were affected with the most acute pain; a perfect desperation seized me; my agitation became intolerable; my frame was thrown into involuntary jerks; my mind was full of illusions; and my apartment seemed to be filled with armed soldiers, and other equally visionary objects. I had nausea and a slight cough. At length, a general sweat broke out, and then I fell into an unsettled slumber till day-light, when I felt refreshed, but not so cool as I did yesterday when you saw me."

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* "Cancha" means toasted maize, and "charqui" sun-dried meat. Charqui is corrupted into *jerked* beef by the English seamen.

Having thus finished his narrative I found that he had still some relics of fever, and more or less hemicrania. I prescribed the infusion of bark, with a little sulphate of magnesia and sulphate of quinine, to which a few drops of dilute sulphuric acid were added; and this he was to take at proper intervals, when free of any considerable fever. Shortly after this receipt was left, the paroxysm anticipated its usual hour of approach, and rose as on preceding days without any notable cold stage. The nurse in attendance, finding his skin hot and mouth dry, gave the patient, as instructed to do in the event of the accession returning, iced-water to drink; and he being a mountaineer, not accustomed to the daily use of ice like the people of the coast, this frigid draught almost instantly it was taken, determined a very strong cold fit, which lasted nearly fifteen minutes, and this was followed by a smart hot fit, but it did not last long. The sweat that now ensued was free and refreshing, and it gradually lapsed into a gentle diaphoresis, and then the patient fell asleep, and slept all night. In the morning he awoke without complaint, and took the above mixture of salts and bark, &c. in doses of a wine glassful, repeated every two hours. He had no further return of fever or any bad result from it, but immediately resumed his commercial occupations.

I would here remark that the high degree of irritation exhibited in the above case would have deterred the followers of Broussais in Peru from using a purgative at all, or, at least, until preceded by blood-letting. But I have had frequent opportunity of observing that this sort of general febrile irritation, kept up in a great measure by a disordered state of the *primæ viæ*, unconnected with local inflammation, may be mitigated at once by an efficient purgative, though unaided by bleeding, as in the above instance.

Case III. The following account was given by the young woman in attendance on the sick, who had the appearance of being a respectable tradesman in the prime of life. The case occurred in February.

The patient had an *empacho,* which evinced itself by great loathing of food, white tongue, bitter taste in the mouth, uneasiness at the pit of the stomach, and a confined state of the bowels, which were filled with wind,—‘ *aventada.*’ I let him have some ordinary clysters, by aid of which he evacuated much : the first stools being hard and scybalous, and those that followed loose and yellow. After this, he felt in a few days as if well ; and therefore he ventured to wash his hands and face in cold water, and in the evening he stepped into the court yard in shirt sleeves. On this very evening sprung up a fever, which must have proceeded from his having washed himself in cold water.

Five days, with to-day, these continuous fevers, *las fievres,* have lasted. The one follows the other so closely that he is never free from them ; but at one or two o'clock in the day they begin to rise, and continue increasing until midnight, occasioning great inquietude and extreme impatience, amounting to desperation.

His skin is burning ; sometimes he complains of his head, and at other times he does not ; but his sleep has utterly abandoned him. During the increment of fever he has an inclination to retch. At day-break, a slight exudation somewhat softens the skin, (only one morning has he been so fortunate as to sweat more freely, when he had to change two shirts,) and then it is that he falls over into a dozy state, and that the fever subsides considerably without ever leaving him altogether.

At the same time when the fever is rising to its highest degree, he feels great heat inwardly, and expresses an eager desire to be allowed to drink iced-water, but I only give him plain cold water with a bit of sugar.—“ No le doy mas que un teroncito de azucar con agua para chupar.” His urine is fiery and high coloured, *incendida ;* and as often as he takes any simple drink, or panada, which constitutes his food, he voids a watery yellow-coloured stool.

I visited this patient about five in the afternoon, when I received the above account of his case, and was told that the exacerbation had just commenced. His pulse was at this time 112, somewhat hard and contracted ; tongue nearly clean and humid ; he implored to have fresh air admitted into his apartment, but his attendant was afraid to admit air from a high window in the room, lest it might induce *ayre* in the sick—that is a sort of palsy occasionally produced by exposing the warm body to a current of cool air.

In the lower belly he felt pain on pressure, which did not exist from the beginning, and, fearing the existence of inflammation there, cold iced-drinks were prohibited. I suspected that the incessant use of enemata might have had something to do with the tenderness now experienced in the hypogastrium, and therefore prohibited them, and recommended that he should be bled without delay.

I may notice it as an instance of popular prejudice, that next day when I returned to visit this person, I could not see him. I was informed by the young woman who waited upon him, that, during night, when the fever had attained its acme, he became quite insensible, and that his mother (who probably considered his case to be a bad *empacho,*) would not consent to have him bled, because, she said, she was under no necessity " *no tenia necesidad*" to kill her son, by bleeding him at the bidding of any one; and therefore she called in another doctor.

I had the curiosity afterwards to inquire concerning the termination of the above case, in which the appearance of the stools particularly indicated a bilious affection, and learned that, though not bled, his disease had ultimately subsided into an intermittent, when it was cured by some preparation of bark.

CASE IV. In consultation, I had to deliberate on the case of a young and robust European, for some years settled in Lima, while labouring under one of the very vehement bilious remittents of the country with which he was attacked in spring.

Before I was called to join in consultation, this gentleman had been many days excessively ill, and treated by several physicians; but the case would not yield to general bleeding, warm baths, ptisans, and refrigerants, clysters, oily embrocations, cataplasms and sinapisms, &c. which had all been tried. When I first saw him, the fever was lively and the remission ill defined; the sensibility of the liver was much excited, and the stomach rejected every thing; bile was vomited by cupfuls; the ear was offended by the softest sounds, those of an affectionate voice; the eye could not tolerate a ray of light; the head ached until it obliged the patient to ejaculate in agony, and the very integuments over the forehead were tumid and greatly swelled.

The *junta* were in doubt about the propriety of further general bleeding. Local bleeding was proposed, but rejected by a majority of votes. The consultation was broken up, and the friends of the sick intrusted me with the charge of the patient. Being thus at liberty to act independently, cupping glasses were promptly applied to the nape of the neck, and blood was abstracted pretty largely, which produced the most striking effects. The swelled integuments of the forehead, from being tense and prominent, became, before the cupping was concluded, soft and yielding; the senses of hearing and seeing quickly lost their extreme morbid acuteness; the headach became moderated; and the stomach was so far composed as to bear a cupful of fresh tepid whey three or four times a day, and in each cupful was dropped three drops of Fowler's arsenical solution.

By these means, the imperfect remissions in course of some days became distinct intermissions; and after a short time, with little more aid than an emollient application over the seat of the stomach and mild opening clysters, the fever disappeared, and the patient went for change of air to a town in the interior, called Canta, where he soon recruited strength, and after a few weeks absence he returned to Lima.

The above cases may serve to give an idea of the variety and intensity under which the bilious remittents appear in Lima, and they also illustrate the downward tendency which these fevers have towards the intermittent character, after the excitement of the system has been lowered by the help of remedies.

On various occasions, however, sufficiently urgent cases of remitting fever present themselves, and with no small disturbance of the cerebral functions, which I have seen suddenly relieved by the vapour bath, or gradually removed by the warm bath, depletion, and evaporating lotions, together with aperient, effervescing, and cooling drinks, without ever changing to the intermittent, or degenerating into the low continuous form, of which I shall soon take particular notice.

It may be worth while to observe in this place, that tartar emetic, in every form of combination, is almost prohibited in the fevers of Lima by experienced native practitioners. This remedy, whether in vinous or aqueous solution, is never considered eligible in fevers of a bilious character, as it is apt to increase the gastric disquiet, or to excite vomiting, which might prove very injurious when the sensibility of the brain is observed to be much augmented, as it usually is in bilious remittents. This practical consideration appears to have prejudiced native physicians against the use of James's powder, which is an antimonial that admits of very general and useful application in fevers, as it both opens the bowels and invites perspiration.

As regards the use of tartar emetic, however, the writer's experience only leads him to consider it inapplicable on the coast of Peru, in fevers attended with much gastric disturbance, and especially when the brain appears to be much affected, as already noticed, in fevers of a well marked bilious character.

4. *Simple Gastric Fever.*—There is a mild kind of fever which seems to be immediately connected with a morbid condition of the mucous membrane of the digestive passages, and re-

ceives the name of gastric fever. It is so frequently met with during the bathing season or summer months in Lima as to deserve a word in passing.

It is marked by anorexia or disrelish for food; a perfectly white and smooth tongue; some thirst, and a desire for cooling drinks; moderate acceleration of pulse without distinct intermission of fever; almost incessant perspiration, which is eminently favoured by the warmth of the weather. The patient is not so ill as to be confined to bed, but feels listless, and likes the ease of the hammoc or sofa; and usually refers the origin of the ailment to cold, caught probably in the bath, or to cold and some irregularity of diet conjoined, as the result of late evening parties.

This gentle fever the women often manage without the assistance of the faculty, by the administration of the mildest injections;—a light farinaceous diet with vegetable acids, and frescos or cold drinks, from which they are not at all cautious to take the chill, though by this neglect they are apt to check a salutary perspiration, and thereby increase the disorder.

5. *Gastro-Enteric Fever.*—As a consequence of an *empacho* from figs or other fruit eaten to excess, or received into a weakly digestive apparatus, we hear the natives complain of a fever which they vulgarly refer to the stomach and intestines together, under the name of *Fievre gastrica entripada*, of which the more scientific term, gastro-enteritis, is an exact translation. This fever appears to be only a more intense degree of what I have described as the simple gastric. It is commonly attended with evacuations, and after the fever has disappeared, I have been consulted regarding the evils it left behind; such as a sense of pain or uneasiness in the transverse arch of the colon; frequent attacks of indigestion, or irregular action of the bowels, being at one time bound, at other times too relaxed. And it is to be noticed that all this inconvenience may be suffered in defiance of the utmost attention to regimen, and no deviation on the part of the patient from the established dietetic rules laid down by the physician.

With regard to treatment, it is commonly confined to bleeding, warm baths, diaphoretic diluents, laxative enemata, cataplasms to the region of the stomach, and a spare farinaceous diet, with occasional use of purgatives. Most medical practitioners in Lima are agreed, and the author on practical grounds concurs in the opinion, that in the gastro-enteric fever with which they are familiar, the moderate use of mild purgatives, sufficient to carry off any undue fecal accumulation or vitiated secretions in the intestinal passages, is an essential point of practice which can rarely be overlooked without detriment to the patient.

Some practitioners trust almost exclusively to the use of gum-water, and cupping or leeching the abdomen, with cataplasms. But leeches cannot always be procured in Lima, and when they are to be found, they are often sickly, and always very high priced, because the mortality among the leeches from Europe is so great as to render it necessary to put a high price on those that survive. Leeches from Chili are of very inferior quality, and do not answer well in Peru.

6. *Gastro-Catarrhal Fever.*—It often happens that cold is caught when the stomach is in a state of repletion; and soon after the individual affected may be seized with intense fever, attended with cough or catarrhal symptoms, complicated with tenderness in the epigastrium, or a marked derangement in the functions of the stomach or liver, &c. Such complications may be expressed under the general term gastro-catarrhal fever; but it is to be observed, that the fever so called may either be radically intermittent, or remittent in its nature, and assume either of these forms; or pass off by insensible gradations, like cases of common continued or sympathetic fever,—as local irritations or confirmed phlegmasia, accompanying the fever, are seen to subside under proper treatment.

Fevers of this complex character, like more simple *tercianas*, arise from a variety of external causes, such as enjoying in the warmth of summer the cool of the evening breeze and night air, in open balconies and ample corridors; changing winter to summer clothes too soon; sudden transitions in the air, marked by a day of sunny brightness, followed by others of a damp and cloudy atmosphere; cold bathing begun too early in the season, or remaining too long in the water at any season; and, lastly, from drinking cold water when overheated by exercise. Children, who are commonly eating at irregular hours, and pampered with sweatmeats, nuts, and fruit, &c. are exceedingly fond in days of sunshine, about the end of October, or early in November, of playing about the doors and court-yards till overheated, and then they run, as indeed they are apt to do at all seasons, into the canals in the streets, dashing on themselves cold water. The immediate result is, a constriction of the cutaneous vessels, or what the natives call stoppage of the pores, *tupimiento de poros*, or simply "Resfrio," which brings on a fever more or less severe, and commonly of a continued or slightly remitting type.

Affections of the kind called "*resfrio sobre el empacho*," or checked perspiration on a full stomach or loaded bowels, are most generally removed in a very easy and brief manner; namely, by warmth and rest in bed, and purgative clysters, followed by simple diluents, as linseed or mallow-water. I may add, that in such cases—when not accompanied with much gastric disorder—a few drops of antimonial or ipecacuan wine is an excellent adjunct to these diluents, intended to remove the constriction of the cataneous exhalents and promote sweat,—an object which is further favoured, when necessary, by the foot-bath, or general warm bath, and a suitable purgative to clear out the bowels.

To checked perspiration during a full state of stomach and bowels, we may trace, after the Carnival sports, and on other occasions, very formidable cases of the gastro-catarrhal fever,—as I mean to illustrate more particularly. But this complication of fever, with local irritation or inflammation, which simultaneously affect the organs of respiration and digestion, may originate from several exciting or occasional causes such as I have already enumerated, without any evidence of a co-existing indigestion, or any undue repletion or accumulation of feculent matter in the bowels. It is, however, of practical moment to recollect, that in by far the majority of cases of the gastro-catarrhal fever, the bowels are overloaded, and require very early and special attention from the practitioner.

I may now offer a few practical examples of this disorder.

Case I.—A portly woman, about 30 years of age, and of a light Zamba caste, made the following relation of her case in January 1836.

"Three weeks ago I had bitter cause of disgust and disagreement with my husband, who keeps a shop in the Calle de ——— He took me by the hand, and conducted me to the street door—saying, 'Anda vete! begone from my sight! I like to live at my pleasure.'

"I repaired to the convent of ———, and while in this asylum, I one day bathed my feet in cold water, and combed my hair with the help of cold water to smooth it down.

"While thus engaged, the bells of the city rung '*Campanadas al fuego*', or the fire-alarm; when, believing the enemy at our gates, I ascended to the roof of the convent, where I caught additional cold; for you will observe, that before this I was colded, '*resfriado*'—and, therefore, more liable to become subject to some serious ailment; especially at a time when my blood was boiling with indignation against a husband, who, at the close of fifteen years that we had lived together, ended our union by throwing me out to the street, 'porque no queria aguantar y ser su alcahueta,' because I would not brook to sanction his irregular amours.

"From all this, you see, it happened that my cough became very severe, and I was further affected by vomiting, purging, cramps in the legs, and my lips became livid; then arose a fever that burned me, and I was attacked by jaundice. At present I sweat continually and excessively, which was not the case at the commencement. The jaundice is retiring, the evacuations have nearly disappeared, and the cramps have entirely left me. But I have still the cough and vomiting, great disquietude, want of sleep, and, worse than all, I have continually in my thoughts the perfidy of the man who injured me, and with whom I will never again live a single moment till the end of time:—No,—should even Father Arrieta require it of me!"

Here ended her narrative. But on patient inquiry and examination, I further ascertained that what she now ejected by vomiting was sometimes greenish, with a dark sediment, that looked like toasted meal; and at other times watery-like, with slimy or mucous matter floating in it. Her stools were loose and perfectly yellow; she felt no pain at the epigastrium, nor anywhere in the abdomen, though gently pressed upon. Her eyes were very yellow, and her expression of countenance anxious and unsettled; the tongue was yellow and furred; breathing oppressed when speaking; urine high coloured, and reported to have been only a few days before so jaundiced as to have tinged linen dipt in it of a deep yellow colour. Her pulse was strong and frequent, notwithstanding that sweat in large drops oozed at every pore as fast as she could wipe it away with her handkerchief. I observed her continually shifting posture, and she said that she tossed and turned all night. Whatever nourishment she attempted to take, as chicken-soup, panada, or rice pap, &c. her stomach rejected; but she had thirst, and wished for nothing except iced-water, which was prohibited on account of her pectoral affection. I found her with a short frequent cough, and when it increased much, she said it induced vomiting, but even when least pressed by the cough, she remarked that she had occasional calls to vomit. Her lips were blistered from the violence of the fever; her gums presented dark or purple spots of a few days duration, and, though some of these appeared like superficial ulcers, there was no discharge of blood from them, as happens in cases of scurvy.

This woman was bled twice after my visit, once in each arm, and the relief it afforded her was such that she was heard to exclaim, "la sangria me ha dado la vida!"—the bleeding has given me life! Now the fever became intermitting, and she was cured in the ordinary way by the aid of sulphate of quinine.

Case II.—A middle aged man, of active habits, a respectable station in life, and of European parentage or descent, on the second evening of Carnival, 1836, made a hearty supper on Chiloe ham, cheese, and eggs, &c. and next day, in sport, they threw upon him a bucket of water, and drenched him all over. This wetting was followed by slight febrile symptoms, and he took some simple laxative; to co-operate with which his wife administered not less than ten clysters, under the impression that his indisposition was owing to *empacho* in consequence of the Carnival supper.

Finding, however, all her endeavours unsuccessful, she called to her aid the family doctor, who, in *junta* afterwards assembled, related that, on his first visit, he found the patient with a strong fever; foul tongue; strong pulse; dry skin; much headach; catarrhal symptoms, and difficult respiration. As often as he coughed, he complained of a most acute pain in the head; and the breast on these occasions (to repeat the patient's own words) felt as if a knife were stuck into it.

The doctor, reflecting on the joint import of the symptoms enumerated, thought that the disease fully declared itself as one of an inflammatory nature, and, therefore, the barber was sent for to bleed the patient. Meanwhile, whey was allowed as a lenitive diluent drink. Thus free perspiration was induced, and all the morbid symptoms were quieted for a while. But next morning wandering pains were felt, at one time in the head, at another in the breast, &c. and, therefore, his physician again ordered him to be bled and to continue the whey. With this arrangement all the parties were contented to remain in a state of expectancy till next morning, conceiving it probable, that the fever would take on the prevailing type of the season,—that is, declare itself a bilious remittent. The patient passed a very bad night, and on the morrow, being the fifth day of his indisposition, the dry skin and tongue, which attended the febrile increment, were preceded by chills and shivering, and the matter expectorated was observed to verge to a sanguineous tint. The family now got alarmed, and a medical friend was called in to meet the family doctor. By the consent of both these professional gentlemen a third venesection was practised; and the patient was put on a ptisan of chicken-water, (*agua de pollo*,) mixed with equal parts of linseed tea, until the doctors should return at the evening visit, further to observe the changing aspect of the case.

At vespers, or after sunset, four medical men, of whom I was one, assembled in junta, when we found the patient in a state of diaphoresis, after having perspired pretty freely since the morning visit of the two physicians; and a small, figured, yellow-coloured stool was shown to the members of the junta. The urine was high-coloured; pulse full and strong; tongue a dirty yellow; head pretty easy; no pain on full inspiration; cough much diminished from what it was shortly before; and the expectoration was free, of a watery and frothy appearance, with some thin mucus among it.

The act of respiration, though easy, was attended by a wheezing sound; and by approaching the ear to within a short distance of the chest, there was a distinctly audible gurgling sound, which conveyed the idea of its being emitted, not from the bronchiæ, but from the heart, which palpitated greatly. The whole epigastrium and right hypochondriac region were sensible to pressure, and tender, and the belly felt puffy and full. It would be tedious for the reader to follow the minute details of this gastro-catarrhal fever which terminated happily.

I may, however, remark, that a slight inflammation appeared on the throat, and suddenly passed, as by metastasis, from one side to the other. The head was so much affected during the exacerbations, that though relieved in the intermissions, it was feared lest the excessive tenderness and irritation shown in the brain during these high stages of fever, might be transformed into a state of formal phrenitis; and hence the junta felt it their duty to recommend that the patient should confess himself to his spiritual guide whilst his mind remained entire.

He used the foot-bath, and was once or twice bled from the ancle, by the advice of the junta; and, when the cerebral irritation was considerably lowered, a blister, to produce counter-irritation, was applied to the nape of the neck. The bowels were opened repeatedly and freely by appropriate purgatives, and as the stools, which were dark and copious, fermenting after a short time like yeast, were day after day presented, the good woman, wife to the sick, rejoiced to see her ideas concerning the *empacho* of her husband, now verified to her full conviction.

A spare, cooling, and diluent regimen was observed throughout; the head was shaved, and evaporating lotions applied to it; and latterly, after the catarrhal symptoms disappeared, pure pine juice was allowed as an antibilious refrigerant. In short, on the ninth day of his illness, and fifth of the medical junta, this patient was declared convalescent; and his usual health was soon recovered.

7. *Nervous Fever*.—Fevers which, in their origin, are attended with high vascular action may, in the course of a few days, assume an adynamic form, and come under the name of the low-nervous, *perniciosas*, or malignant fevers of the Limeno.

In this manner intermittents and remittents are seen to degenerate into the continuous and pernicious; and the unfavourable transition in these instances appear to be less under the influence of common occasional than of particular constitutional causes. Happily, however, fevers of malignant character (of which I have witnessed more in spring than at other seasons) are comparatively rare on most parts of the coast of Peru, and must be considered as deviations from the more ordinary and milder appearances of the prevailing fevers of the country.

I will here offer a few illustrations of these pernicious fevers, as they are commonly called.

A robust young man when affected with high fever of only one day's standing, requested the assistance of his medical adviser, who found the pulse strong, full, frequent, and rebounding, with a strong throbbing sensation at the temples; skin dry and very hot; tongue foul, with bright red edges; slight pain at epigastrium on pressure, and irritability at stomach, indicated by nausea or vomiting.

After one or two bleedings, and other ordinary means to mitigate the severity of the attack, in a few days it entirely changed its aspect. The pulse became low and excessively frequent, or small, fluttering, and too rapid to be easily counted; the patient became feeble and tremulous, while the skin continued hot and dry; the fever exhibited irregular exacerbations, rarely terminating in sweat; and headach, drowsiness, or some marked disorder in the head, showed itself more and more, as the disease advanced to its crisis, in the form of salutary sweats. With the help of neutral salts in the morning, and anodynes in the evening; farinaceous diet; and lastly, change of air, the patient ultimately recovered, after a tedious convalescence.

I have seen the bilious remittent after several days continuance degenerate into the state of the *perniciosa* or malignant. Thus, in the latter end of October, a young gentleman of a stout appearance, and a native of Europe, was taken unwell in Lima with a fever, which soon declared itself a regular remittent. It was attended with tenderness at the epigastrium, furred tongue, headach (increased during the evening exacerbation), belly loose, the stools being thin and frequent, at first green, and then of the colour of orange-red or yellow. The skin was dry and hot, the pulse strong and frequent, the urine scanty and high-coloured, and the patient anxious in his mind.

Blood was twice drawn to the extent of about one pound at each time; he had several warm baths, emollient applications to the abdomen, laxative enemata, sinapisms to the feet when the head appeared much affected, and for food and drink he had arrow-root or thin rice-pap, alternated with whey. A consultation was called, and shaving and cupping the head, &c. determined upon. What particular remedies were afterwards used I cannot say. But after several days had elapsed, this young man became the subject of various medical consultations; and, finally, he sunk so low, that, with great debility and a small quick pulse, his tongue appeared furred, and of a dirty dark aspect; lips parched with sordes on the teeth; he had also deafness, and during the night stupor and incontinence of urine. He recovered under the influence of an effort of nature. The cupping, which had been early recommended in junta, was not carried into effect under the superintendence of the physician, who was left in special charge of this case. But nature did what the doctor omitted; for, when the case had become nearly hopeless, a burst of epistaxis spontaneously supervened, and rescued the patient from approaching death. This spontaneous emission from the nostrils removed cerebral congestion, restored consciousness, mental health, and the power of the will over the muscular motions of the body. Hence convalescence at once followed the natural crisis by epistaxis. And the event offered this important lesson, very worthy of being borne in mind by those attending cases of a similar kind, that, by timely interference and seasonable local depletion, the happy effort of nature might have been anticipated; and that, if cupping had been resorted to in an earlier stage of the disease, the patient's sufferings might have been shortened, and the imminent peril that threatened his existence easily averted.

In other cases of pernicious fever, the precursory symptoms of excitement may be exceedingly moderate, and the nervous type show itself without any well-marked synocha. Thus I have known a young woman feel as if chilled, "resfriado," and take pectoral orchates with a view to remove the catarrhal symptoms; and the physician who commonly attended her ordered her to be bled, but in very small quantity, under the suspicion of the existence of an obscure peripneumony. When called to visit her I observed that the bowels were costive, and when acted upon by opening medicine, the matter voided was dark and of a highly offensive smell; the pulse was small and extremely frequent, hardly to be counted; the eyes were suffused and red; attention distracted and the mind confused; the skin dry or partly humid, with partial and transient sweats; great irregularity in the distribution of nervous energy, as indicated by rapid and alternate increments and decrements of fever, and unequal heat of surface, without any apyrexia or interval of fever. With the further progress and termination of this case I am not acquainted; but enough is stated to characterize the type of the fever.

I was called to see a stout young man in Lima, when sinking under a continued fever of several weeks duration. He was reduced to the deplorable state of lying with his eyes and mouth half open, teeth incrusted with dry sordes, the tongue dry, rough, and brownish; senses heavy and intellect dull, with language occasionally incoherent; the pulse 120, small and fluttering; the belly was costive; and the urine high-coloured. Before I saw him in this condition he had been treated by stimulants, tonics, and cordials; but, by giving him two grains of calomel every four hours in the form of pill, before he had taken thirty grains, the gums became mildly affected, and in three days he was convalescent. As soon as the mouth was touched by the remedy, his bowels were freely evacuated by a dose of salts and senna, when the depositions carried off were as dark as ink, and intolerably fetid. After this the disease assumed quite a different aspect; profuse perspiration followed, the circulation became equalized, and the young man had a refreshing sleep, from which he awoke with a clear and collected mind. Henceforth he had a favourable convalescence, and recovered perfectly.

Fevers beginning with symptoms of high excitement, and ending in the depressing manner which I have briefly described, are frequently known to arise, on the sandy plains of the coast, from exposure to intense solar heat; and then the head is the part first complained of, and violent fever of a pernicious tendency ensues. I have known a young Indian thus attacked when bathing himself in a deep pool on a very hot day, with all except his head in the water. He came out from the bath with a violent headach; and immediately covered over his head with a poultice of wet mud, which, he said, was considered a good remedy in his native place. The fever appeared with high vascular excitement, for which he was bled, and the bleeding relieved without removing the headach. He resided a few miles out of town, and had not the advantage of regular medical assistance, though he had the good fortune of residing in the hospitable mansion of a charitable gentleman, who said he always cured the poor Indians about him by active English remedies, as salts and blue pill, but that the rich Indian who went to Lima to be cured on the *spectative* plan commonly died. I saw this poor Indian afterwards in a state of convalescence, and he recovered slowly. When at the worst his skin was reported to have been hot and dry, the pulse extremely low, body quite tremulous, head ached continually, and the lower belly was tender on pressure, while the tongue looked perfectly clean.

I have witnessed the case of a praiseworthy ecclesiastic of Lima, who, though never accustomed to go out of town, had a painful inducement to visit Chorrillos, (three leagues from Lima), when he heard that the curate, whose assistant he was, died at this watering-place. The weather being very sunny, and the air of the close conveyance in which he was seated being very hot, he, unaccustomed to exercise, felt the exertion of going and coming the three leagues too much for him. He was also distressed in mind for the death of his friend; and, it was said, he inhaled some deleterious exhalation from the dead body confined in a shut up apartment, which he opened and entered without any precaution or previous ventilation. These causes conjointly were assigned for the fever, which appeared in its origin with symptoms of synocha, but terminated in a rapid failure of vital power, proving fatal on the fifth day.

I was only called to see him on the last day of his malady, when I found his pulse frequent, fluttering, and yielding, or retiring under the gentlest pressure of the finger; the tongue perfectly white, which he showed when desired, though he did not speak; and he appeared to be, when left undisturbed, in a somewhat lethargic state. In this drowsy and sunk condition, his attendants said he had only been since the day before. A stool was exhibited, which consisted of hard fæces, like hazel-nuts or filberts in size and colour. No opening medicine, except the customary clysters, had been administered. From the commencement of the attack, he had headach and tenderness at the epigastrium. He was twice bled in the early part of his sufferings; but his head was not shaved; he had a succession of sheep or pig cawls applied as an emollient to the abdomen; he drank cooling ptisans and "frescos con nieve," or refrigerating beverages with ice, which were not suspended till the fourth day of the disease, viz. on the day preceding its fatal termination.

With regard to the treatment adopted by a native practitioner in this case, I may be allowed to express my disapprobation, and observe that, if, after the first or even second general bleeding, (though in fevers of adynamic tendency depletion should be used with great circumspection,) the bowels had been opened freely,—the head shaved and kept cool by proper lotions; or, in the event of this not proving sufficient to relieve the head, had cupping-glasses been applied to the nape of the neck, and a good blister to the epigastrium, such means would at least have afforded the patient a better chance of recovering than what fell to his lot.

The use of iced-drinks in this fatal case was not appropriate practice under the actual circumstances; for from the tenderness at the epigastrium it may be supposed that the stomach was not free from acute inflammation; and there was ocular evidence from the appearance of the alvine discharges, that the condition of the bowels had not received proper attention. If iced-drinks could have been at all admissible in such a case, they could only be so, as in other instances of daily occurrence in which they are had recourse to, after the bowels had been suitably prepared for them by clearing out their irritating contents. There appears no good reason for having omitted the shaving of the head of this ecclesiastic; but it may be observed, that to this practice the inhabitants of Lima are very averse. In a case of repeated consultation, in which it was deemed necessary for a young woman's safety to apply a blister to the occiput, I have known some native physicians so sympathizing and sensitive, as only to allow the barber to expose a surface about the circumference of a dollar, or little more than what every friar shaves on the vertex or crown of his head. But, however scrupulous native practitioners are in despoiling the Limenas of that natural ornament which they all prize so much, as never to crop from their childhood upwards, yet life is surely of more value than the handsomest tresses of the female patient.

It is an important feature in the pernicious fevers of Lima, that whether the affection of the head be primary, or, as more usually happens, secondary, or apparently coeval with gastric disorder, we are seldom called to any case of this nature, especially when of some days' duration, in which we do not find a morbid degree of irritability of the stomach, demanding the utmost attention, both as respects diet and medicine. For the rapid sinking of the general strength, or vital powers, may be in these cases, observed to be connected with a morbid condition of the gastric organs.

It should further be remembered, that the convalescent from one of those attacks requires so nice an adaptation of the nutriment he takes, to the impaired strength of the digestive powers, that he may become delirious at night by the indigestion of a soup, somewhat too rich or gelatinous, taken in the middle of the day; and relapses often occur when all danger is thought to be over, because the attendants are only solicitous to re-establish by generous diet the strength of the patient. In consequence of a sudden transition from farinaceous and low diet, to eating the breast or wing of a chicken, or any sort of animal food, patients from being convalescent are seen to fall into a state of stupor, from which they are perhaps so fortunate as to be roused again by the operation of an effective purgative, followed by a blister placed on the region of the stomach. And in some such cases, I have known the healthy functions of the brain recovered at the expense of a general bleeding; which, however, can rarely be so eligible as local depletion in such instances, as it will be commonly found, that the persons affected have already been much debilitated by previous venesection and protracted disease.

From topical emission of blood at the occiput or nape of the neck, I have had the pleasure to witness the most beneficial effects, when *tercianas de cabeza*, formerly alluded to, or more or less perfectly developed intermittents with a particular determination of blood to the head, hurried on to assume what may be called a typhoid or low nervous type.

Camphor, musk, and all such remedies, though frequently used in native practice, I have never known do good when tried in the pernicious or malignant fevers of the country; on the contrary, they do harm; and in almost every case wherein I have known them to be administered, gum-water, the alleged specific for gastro-enteritis, would be a far better remedy. I once attended in consultation, a young man, in whom a common *terciana*, to the best of my recollection, had degenerated into a fever of a low nervous aspect, which the consultation was called in to remove. The fever never left the youth, whose bowels were costive, skin dry, mouth parched, and pulse low, but much accelerated; his spirits were dejected, and petechiæ appeared to a considerable extent on his body. Here the treatment adopted was to give the infusion of Peruvian bark, with a small quantity of sulphate of magnesia several times in the course of the day, and by this means the bowels were kept open without causing any such excessive evacuations as could further debilitate the weakly patient. Cold water, with the juice of the pine-apple or some other cooling fruit added to it, was drank after each dose of the bark in particular; and generally, or at any time, he was permitted to partake of the same grateful drink when he had urgent thirst; always recollecting this exception that, if there should be any diaphoresis, or indications of more free perspiration, cold drink was absolutely forbid. His aliment consisted of pap, made from rice and bread, seasoned with a vegetable acid. Under such treatment the young man recovered.

Fevers of adynamic termination are sometimes accompanied with parotid swellings; but not frequently, so far as I had an opportunity of witnessing.

In consultation, I have seen one memorable instance where, at the close of the fatal disease, the symptoms were those of a genuine *typhus gravior*. The case alluded to was that of an accomplished and fashionable young lady,* whose death was deeply lamented among those of her own high rank in society.

But it is to be observed, that though such aggravated cases of what might be called sporadic typhus are now and then known to occur in Lima, and in the warm valleys adjacent, or along other parts of the Peruvian coast, yet, we never find that these malignant fevers spread from house to house, or from individual to individual. Never are physicians or attendants on the sick affected with it from immediate contact with those who suffer from it; and the stranger who first witnesses a case of this sort in Peru, after having been familiar with typhus in Europe, is apt to conceive that danger is to be apprehended from contagion, and he directs his measures accordingly. But the native practitioner laughs at his imaginary fears, and assures him his ideas are erroneous, and that experience will satisfy him that the pernicious or malignant fever of their happy clime is never contagious.

To this statement, however, there remains to be mentioned a singular exception.

Dr J. M. Valdes of Lima, in a pamphlet on the Epidemic which prevailed in his native city during the siege it underwent in the year 1821, states at page 23, where he treats of the continued bilious fevers that had degenerated into putrid or malignant,—that is, fevers in which there was observed a sudden prostration of strength without manifest cause;—that this fever was contagious in the hospitals, and in the houses where many sick were assembled together. And at page 27 of the same valuable treatise, he remarks, that the exciting causes of this epidemic were assuredly consequences of the war, which deprived the inhabitants of the salutary use of ice, good bread, and wholesome food, and which kept their minds in terror for the loss of property and life. This is the only notice that, during my residence in Peru, I had of the contagious power of the putrid, or what is usually called the pernicious or malignant fever on the coast. And supposing the doctor quite correct in his observation of the fact, as stated by him, it is obvious that the anomaly is one peculiar to those revolutionary times and circumstances, and not a fact of ordinary occurrence in the practice of the Limese physician, who, as I have mentioned, laughs at the very idea of contagion.

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* Miss Taramona.

EXANTHEMATA.

Among the cutaneous diseases prevalent in Lima may be enumerated, *first*, the principal febrile eruptions; and, in the *second* place, various exanthematous affections unaccompanied with fever.

A. *Febrile Eruptions.*—1. Miliary Eruptions, vulgarly called sarpullidos; neither infectious nor always attended with fever;* 2. Variola; 3. Varicella; 4. Rubeola; 5. Roseola; 5. Acute Erythema, usually symptomatic of gastric disorder; 7. Scarlatina; 8. Urticaria; 9. Purpura; 10. Erysipelas; 11. Furuncular tumours called *chupones*, frequently attended with smart fever, and most acutely painful; 12. Anthrax, or carbuncle, which appears in the loins, back, or nape of the neck, and is prevalent among the bronzed and negro classes; 13. *Grano de peste*, or a malignant furunculous pustule, which usually appears on the arms and face.

On the above catalogue of cutaneous affections, it would be superfluous to comment in detail; but a few observations may be offered on some of the diseases enumerated.

1. *Variola.*—This disease, so fatal in some other parts of Peru, is in Lima a comparatively mild disorder. Indeed, vaccination has become so general in the capital, that there, at least, through the diligence of Dr Figueroa, the small-pox is nearly exterminated. In private practice I have only seen one or two cases of the disease; and Dr Herrera, Physician to the Hospital de Incurables, where patients affected with small-pox are usually sent, informed me in October 1835, that during two years he had then been in charge of the hospital, he had only lost one patient of "*Viruela*," or variola, and mentioned that this disease scarcely ever appeared in a malignant form among them. They are chiefly slaves from the estates surrounding the capital, who are in the present day received into the Hospital de Incurables; not, however, as incurable, as the name of this institution would imply, but to be cured, and that at the easiest and cheapest rate.

2. *Rubeola.*—This is an exceedingly prevalent but mild disease, which occurs at all seasons.

In the same family the eight following cases presented themselves to my observation in the spring of 1835, when measles prevailed in town; and as they show how the disease, if allowed to have been of the same nature in all those instances, may be modified in individual constitutions, and persons of different race or cast, when exposed to the same source of contagion, I shall notice them separately.

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* Under the term "Sarpullidos" may be included the Lichen Tropicus, or prickly heat.

a. A boy of Spanish descent, and about 9 years of age, was the first of the family affected. On him the eruption was general; the fever very moderate, and there were no catarrhal symptoms.

b. A young gentleman (brother to the above,) 14 years of age, was affected with mild *cynanche tonsillaris*, but no efflorescence appeared on the skin.

c. A Mestiza girl, 10 years of age, was affected with a sense of oppression at the *scrobiculus cordis*, and moderate fever (during which she vomited a "lombriz," or long round worm,) which preceded the cutaneous eruption. This patient had slight sore throat which, on inspection, presented a red and irritated appearance, but without tumefaction.

d. A Negrita, or negress, 12 years old, was affected in like manner with the Mestiza, excepting the accident of the *lombriz.*

e. A Cholito, or little Indian boy, had a mild fever and light eruption, with a slight uneasiness at the throat, accompanied with unusual redness of the fauces.

f. The coachman, a Zambo lad, had a very copious and general eruption, and a strong precursory fever, aggravated, probably, by having persisted, for the first days of his illness, in taking hot *mirasol*, or red agi-pepper, in his soup.

g. A young Zamba girl, 11 or 12 years of age, suffered a very mild attack, and had but a slight eruption. She, like the coachman, never complained of sore throat. It is to be observed that, two or three days before this girl's febrile disorder appeared, her bowels had been acted upon pretty freely by clysters,—a circumstance which probably conduced to the mildness of the measles which followed.

h. A Zamba, about 17 or 18 years of age, was the last person in the family affected with this disease, and in her case the fever ran high, attended with oppressed breathing and catarrhal symptoms. She had a perfectly formed *cynanche tonsillaris*, and with it a profuse eruption on the skin; and as the eruption retired and the throat recovered, she was seized with *cynanche parotidæa*, but she soon got quite well.

This girl, some years before had suffered from hæmoptysis, and was suspected of being in a state of confirmed decline; but long before this attack of measles, she had been considered quite free of all these old complaints.

In the above eight cases, which occurred as mentioned in the same family or household, the precursory fever varied from three to six days; and the shortest fever was in the case of the youngest, or the first of those attacked as described. All the cases occurred in the course of about twenty-eight days, the one patient recovering as another fell ill; and, occasionally, several of these individuals were confined together in the same apartment at the same time.

3. *Roseola.*—This affection I would include in those transitory efflorescences indiscriminately called "*brotes*," and which are ushered in by some restlessness and acceleration of pulse. The general denomination *brote*, or rash, is applied to those varieties of cutaneous appearances so common in infancy and childhood, for which the natives have as yet adopted no specific names. By dieting or changing the nurse, by open bowels, general cleanliness, and daily bathing, these affections are commonly rendered harmless; and little professional curiosity or interest is displayed in the ordinary management of such exanthemata.

4. *Scarlatina.*—This disease is happily not so frequent as rubeola, yet it is well known in Lima,—principally in the form of *scarlatina simplex*, or *anginosa*.

In the year 1832, I was called in consultation (not many hours before the patient died) to assist a Chilian gentleman affected with a very malignant case of *angina*, or ulcerated sore throat, which was made subject of proto-medical inquiry at the time. A few days after his arrival in Lima, he died of this malignant sore throat, the seeds of which he must have carried with him from his native country; for he was heard to say that he had come away from home, "huyendo del peste," or flying from the plague of a scarlet fever that then raged in Chili.

In this case there was no distinct exanthematous affection of the skin; but we may be allowed to infer that the inflammation of the throat and mucous linings of the first passages was so concentrated as to have prevented the appearance of an external efflorescence or eruption, which would probably have appeared had not the patient been early destroyed by gangrene. That this fatal case was essentially of the nature of the Chili epidemic, or scarlatina, is verified by the fact that a military friend who visited him in his last illness, as well as his nurse, were immediately after seized with scarlet fever in a mild form; but precautions were now taken, and the contagion was not allowed to spread.

I am of opinion that, if yellow fever (unknown on the shores of Peru,) were ever to be imported as the scarlatina had been, it would not propagate itself by contagion, provided the public precaution were taken to place the sick at a distance from one another, and in well ventilated situations, so as not to form a focus of infection, as happens in confined situations, such as ships and prisons. And further, by being conveyed one day's journey from the coast to the inland country, the infected could be at once (even in the most sultry months of summer) transported into sufficiently elevated localities, where the change of air and climate should infallibly annihilate the contagious power of this very formidable malady, so familiar to the inhabitants of some parts of the eastern shores of Spanish America.

But to return from this digression, I may here remark that there is a form of angina, which appears to be in some degree akin to scarlatina, unaccompanied with any cutaneous eruption, and of frequent occurrence in Lima. It is sometimes preceded by rigors and fever, at other times the alteration in the pulse is very little, but there is a soreness in the throat at the time of swallowing. The tonsils appear very little, if at all swollen or elevated, though they may be slightly and superficially ulcerated, or have an aphthous, and grayish or whitish aspect.*

This affection of the throat I have seen various persons, chiefly adults, affected with, at or about the same time: but I could not ascertain that it ever was contagious, though I have seen it occur when scarlatina was known to be in the city.

In several instances, I met with this kind of angina, accompanied with a low nervous fever, and great prostration of strength. Where the affection of the throat was slight, opening medicine and cooling tamarind drinks were sufficient for the cure. In severer cases I was accustomed to prescribe, with satisfactory effects, an emetic of ipecacuanha, and afterwards administer the infusion of bark, with a small quantity of a neutral salt, just enough to keep the bowels easy, without producing debilitating evacuations.

I have known a young lady in Lima affected with a malignant sore throat, without any cutaneous eruption, whose ailment (considered to be a variety of scarlatina) was greatly aggravated by the musk and hot regimen prescribed her, by some young medical gentlemen, who earnestly resorted to the application of stimulants, as they saw her strength sink under an adynamic fever. I was called to see this person, and suggested the propriety of leaving off the stimulating plan of cure. The consequence was, that a dose of sulphate of magnesia to relieve the bowels, followed by the bark infusion, restored her readily to health, after her situation had excited great concern.

5. *Purpura.* It may be noticed generally, that the *purpura simplex*, or small petechial like flea-bites, the *Porphyra pulicosa* of Dr Good, is a very common appearance in Lima, especially among women and children, in chronic febrile diseases, when those

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* The aphthous sore throat of young children is a very common affection, as may be easily conceived, since the alimentary organs are very commonly disordered. To remove this affection the natives use various acidulated syrups, all of them quite inferior in their effects, as local applications, to the common mixture of borax with honey.

affected happen to be laid up in ill ventilated apartments, or residing in narrow lanes on the banks of the Rimac, or in the sultry confined apartments attached to little retail shops in nearly all the principal commercial streets of the city.

But the *purpura hæmorrhagica* is seen on the coast to affect, with remarkable frequency, Indians of either sex, recently arrived from the interior of the country; though the disease is by no means confined exclusively to such persons.

Boys newly got from the inland valleys, who have lived chiefly on fruit and vegetables, and are in the capital intended to be brought up to serve at the tables of the wealthy, where they eat animal food, and live on a more generous diet than they have been accustomed to from their childhood, are those in whom I have witnessed the worst examples of the *purpura hæmorrhagica.* The affection in those instances came on without any premonitory symptoms of illness, while the boys were to all appearance, but a day before the attack, perfectly well.

This disease, when it occurs in the form of a continued oozing from swollen gums, with small frequent pulse, and an appearance of dark blood in the stools, together with innumerable small livid spots on the skin, may be cured readily by a mild efficient purgative, such as an infusion of senna and rhubarb,. with the addition of a neutral salt, followed up by small doses of sulphate of quinine dissolved in water sharpened with sulphuric acid. But in other instances, the hæmorrhage from the nose and mouth, &c. is so active, and kept up by such strong vascular action, indicated by a full, hard, and frequent pulse, that it can only be subdued (and that not unoften but for a short time), by the use of the lancet; after which, purgatives and acidulated drinks may be of efficacy.

6. *Grano de Peste.* The following account, which I think well calculated to convey a correct idea of this disease, was verbally given me, in March 1836, by a respectable woman in the part of the suburbs called *Malambo*, only a few days after she had recovered from an attack which she described in the following terms,—"It began, on the left arm, like a mosquito bite, being merely a small red speck, with a sort of minute vesicle in the centre. It went on rapidly increasing with intense fever; and in four days the whole arm had swollen so as to appear ready to burst, and the swelling reached the left breast. The spot, which at first looked only like a mosquito bite, now became a hard grain or boil, entirely black, and surrounded with a red and indurated base. The little vesicle in the centre, opened a small mouth, or orifice, through which there was no discharge. At the end of eight days an incision was made into the grain, but nothing escaped from it, except a thin ichorous discharge, or "aguadija." The grain attained at last the size of a black grape, but it was flat at the top, (*chato*,) and

of a hard consistence until opened. It was cured by emollient fomentations, and two bleedings, ordered by the doctor."

We are to understand as a matter of course, and therefore taken for granted in this woman's description of her own case, that occasional enemata and acidulated refrigerant drinks were here used according to custom, and at no time lost sight of during the progress of the disease or treatment. I may further remark, that, in its commencement, the *Grano de Peste*, which is not contagious, is usually attended with fever of inflammatory character, and, if not well managed from the beginning, it soon degenerates into an adynamic form, very often ending in death. Hence the practical importance of checking, in proper time, by venesection, that high excitement, and strong vascular action, with which the disease commences in young and robust subjects, and which naturally leads, if not controlled by art, to a succeeding state of prostration of strength and exhaustion of vital power.

B.—EXANTHEMATOUS AFFECTIONS UNACCOMPANIED WITH FEVER.

Of the exanthemata unattended with fever, and of common occurrence in Lima, but of which I have preserved no written descriptions, I will here enumerate such as clearly present themselves to my recollection, without desiring to have it imagined that the enumeration, though correct as far as it goes, is by any means a complete list of such cutaneous affections.

1. *Ecchymomatous discolorations*—These are called "cardinales" by the natives, and appear in the form of black, blue, and livid marks which are of longer or shorter continuance, arising spontaneously, and, especially in fair-skinned females, and feeble children, without external bruise or injury. After ague-fits, dark marks of this kind are sometimes observed round the eyes; but these extravasations quickly disappear without medical interference.

2. *Pityriasis versicolor.*—This discoloration not unfrequently occurs among persons of white and delicate skin, particularly Europeans, in whom I have seen it appear in brownish yellow patches about the neck or abdomen. I have known it disappear by removal to a cool climate.

3. *Leucopathia.*—This is a disease which may be observed in negroes, mulattoes, and other dark races, in whom the skin, especially about the face and hands, undergoes a partial change from its natural dusky colour to white, presenting a curious spotted appearance.

4. *Jaundiced yellowness of eyes and skin.*—We often see this appearance as symptomatic of chronic liver disease.

6. *Prurigo* is a common disorder in warm weather. There is

sometimes complained of a local pruritus of the genitals, which is intensely annoying and difficult of cure.

8. *Caspas.* This is the native name for slight furfuraceous affections, or desquamations of the skin, very common among the inhabitants of the coast. Sea-bathing is held to be a good remedy for mild attacks of this disorder; but sometimes these may be of syphilitic origin, and therefore require to be considered carefully, and treated judiciously, as circumstances may suggest. I may mention that those affected with syphilitic eruptions are usually very sober in their habits; for even women of the town in Lima are strangers to the common English vice of inebriety.

9. *Psoriasis.* This disease is not an unfrequent one; more particularly that variety of it called *P. palmaris.*

10. *Lepra* and *Ichthyosis* are both frequent and inveterate affections among the dusky and slave population.

11. *Ringworm* (*Impetigo figurata*) is a frequent and troublesome affection, which seems very generally to depend on constitutional causes; but when not old and unusually inveterate, it commonly yields to cleanliness, well-regulated bowels, and the local application of the mild citron ointment.

12. *Scabies or Itch.* This disorder is divided by the vulgar into two sorts; the one, in which the pustules are larger, they call "Carracha Sierrana" or the itch of the interior or hill-land; and the other, which is the commonest variety on the coast, they call "carracha fina" in Lima, in consideration, we suppose, of the smaller sized pustules in this infectious disorder, which they attempt to cure by baths and general bleedings, &c. having a great prejudice against sulphur, which is the well known and most certain remedy.

14. *Pasas or Favi.* The infectious disease to which the Limenos apply the first of these names, consists of soft and painful excrescences appearing between the nates, or on the piliform parts in the vicinity of the anus. Such of these excrescences as I have had opportunity to see were of the size of dried grapes, as the appropriate term *pasas*, which means raisins, at once suggests; and like raisins they are flattened on the surface. They have also irregular edges, and emit some discharge. The local remedy consists in the application of a proper escharotic, as the *sulph. cupri*, or blue-stone, followed by a bread poultice, rest, and cleanliness. Constitutional treatment I have not known them require; though it will always be convenient, should it only be from the usual locality of the disease, that the bowels be kept quite open and easy.

15. *Lupus.* I have seen two instances of a lupous or corroding ulcer on the forehead. Both cases occurred in females; the one middle-aged, and the other far in the decline of life. The former example, which was somewhat more superficial than the latter, heal-

ed under the use of aperients and the local application of the citrine ointment, well diluted; the latter appeared to be incurable; for arsenical and other remedies, usually recommended in books, were resorted to without any improvement in the appearance of the sore, which was a deep ulcer, gnawing, and destroying the common integuments and fascia on the forehead, and between the brows. Affections of this kind are not rare, as I am credibly informed, in different parts of the interior, where they are known under the name of "uta;" a word used by the natives to denote an insect, which they suppose to be the cause of the lupous ulcer, to which they therefore transfer the name of the insect.

16. *Elephantiasis.* This term is confined in Peru to a large tumefaction in the leg, which becomes overgrown, clumsy, and through time quite rough on the surface. As far as I have seen, it only affects the negroes, or other dusky persons of African descent. I do not recollect to have seen more than one instance of it in the warm valleys of the interior, and it is possible that this case may have originated on the coast. I witnessed a recent case of it in a young Zambo, who was brought from the vale of Caneti to the house of his master in Lima. When on the sugar estate in Caneti, he was employed as *rigador*, or in irrigating the plantations; and he referred the origin of his swelled leg to his being so much employed in the wet, which few negroes are fond of. He was now made to change his occupation, and to pass from the wet labour of the field to the dry service of the kitchen; and when I last saw him, his leg, though of a large size, had not yet acquired the usual asperity of surface characteristic of elephantiasis in its perfect state. I would be disposed to believe that the tormenting insects named *Pigues*, or chigres, which abound to excess in the slave-barracks or galpon, on the coast, and are known to commit extensive ravages in the feet and toes of the slaves, contribute not a little to induce the great thickening and roughness of the integuments observable in the elephantiasis of that country.

I should also mention that the Guinea-worm is said to appear occasionally, emerging from under the cutaneous tissues of the agricultural slaves on the coast; but, as I never witnessed a case of this nature, I can say nothing on the subject from personal observation.

Art. III.—*Contributions to Pathology. Hydrophobia, or Rabies. Apoplexy. Tumours of the Brain. Atrophy of the Optic Nerves. Chronic Hydrencephalus.* By Alexander Kilgour, M. D.

I. No cases of hydrophobia had occurred in Aberdeen, or the north-east of Scotland, in the memory of any inhabitant, until the present year, (1839), when the following cases of it made their appearance. In the month of March considerable alarm was created by a bitch which was running about through the streets, and bit a considerable number of persons; but it was ascertained that the animal had been deprived of her puppies; and her ferocity was ascribed to this as its cause. She was destroyed; but, in consequence of the excitement produced, the magistrates directed that no dog should be allowed to appear on the streets without being muzzled; and those found without the muzzle were taken to the watch-house and destroyed, or their owners fined. The muzzles used were leather straps, a part of which goes round the head of the dog an inch or two above its nose, and prevents it opening its mouth to half its usual extent, or protruding its tongue. To save the expense of a muzzle made by a saddler, many of the poor people had their dogs' heads confined by pieces of cord or tape fastened tightly round them. Those not muzzled were confined at home, being generally tied up; or were led about by their owners on the streets with a string attached to them. In consequence of the alarm, and from the measures of security which were enforced, dogs were shunned, and when met with loose, they were hunted by boys until they were irritated, and then being declared mad, they were pursued until destroyed, or got clear of their pursuers. Whether from this system of hunting and baiting them, or that they really were diseased, and had, as usual when affected with rabies, run themselves to death in obscure and unfrequented places, there can be no doubt, that several dogs were found dead within a mile or two of the town, and of these some had previously been seen running wildly about the country. Many rumours went abroad of strange dogs having been observed affected with disease, and of their biting others; but nothing could be gathered of a definite nature, when these reports were investigated.

In the three cases following, the history of the bite is given as far as could be ascertained. The first case, as well as the third, proved fatal at the patients' own houses; the other was admitted into the Infirmary, under the charge of my colleague, Dr Dyce, who has furnished me with the report. I leave the third case to speak for itself. I did not see the patient in life, but there is no doubt on my mind, nor I believe on that of the medical gentleman who attended her, that it was a decided case of hydrophobia.

I have nothing to offer in regard to the pathology of the disease or its treatment. I believe we are as far as ever from having any satisfactory understanding of the one, as we are from possessing means of ensuring a successful issue in the other. There are two points, however, common to two of these cases, the second and the third, that they took place in individuals of a particularly nervous temperament; and that the most careful *post mortem* examination in the first case, and in the second to the same extent, except that the spine was not opened, discovered to us absolutely nothing that we could connect with the previous symptoms. Could any thing be gathered, in a physiological view, from the fact that all these patients, when pressed to take fluids, demanded a spoon with which to convey them to the mouth; and that they preferred taking substances in the state of pap, for example, porridge and milk, and bread and milk, or tea with biscuit soaked in it, to either solids or fluids? In Dr Dyce's patient, I observed, on my carrying a small white earthenware vessel with water in it towards the patient's bed, that he began to move his mouth and throat before I offered it, as if in the process already of deglutition or rather mastication, and what he took from me was in small mouthfuls, and swallowed as if after mastication, instead of a steady draught.

Case 1.—Thomas Alison, aged 10, residing at Footdee, of a healthy appearance, and described by a most intelligent person in whose vicinity he resided, and who daily saw him, as a remarkably smart and clever but tricky boy, was bit on Friday the 10th of May by a dog. The dog had at one time been domesticated in the same neighbourhood, but had afterwards been taken into the country for a few miles, where he had been bitten by another strange dog, and on getting back to town on the day mentioned, had visited his old quarter. There was no reason for supposing at the time that he was diseased, and he was not previously considered vicious. A man in the building-yard, which he entered, was patting him, and the boy Alison put down his hand for the same purpose, when the dog bit him in the wrist.

The boy's mother stated that he was much alarmed from the bite, and that, since that time, he has been often disturbed in his sleep, rather fretful, and not as usual amongst the rest of the children. She washed the wound with spirits, and applied poultices. On the 21st May, he went into the harbour in a boat, and losing his oar, became very much excited, and screamed until some persons went out to his assistance, and brought him ashore. But, residing close to the harbour, he was much accustomed to boating in it, and his mother stated that this situation would formerly have been in no way alarming to him. On Wednesday the 29th May, she observed that he was unusually dull and inclined to sit by the fire. She thought his stomach was disordered, and gave him of her own accord a calomel powder, and on the following morning a dose of senna infusion. On this day, Thursday the 30th, he was first observed to have spasms. On Friday, at 7 in the morning, Dr Cuddie was sent for, and informed that the boy had hydrophobia. On visiting him he was satisfied that such was the case; and he bled him and gave him some purgative medicine, and after that calomel and opium. At a few minutes past one of the same day, I saw him along with Dr Cuddie and Dr Ogston.

The instant we entered the room, and passed the end of the bed, which was close to the door, but covered, the boy started up with a scream, and placed himself in a sitting position in the farthest corner of it. My impression, at that instant, and all the time I saw him, was, that I had never seen any thing like his appearance, but that of a child who had been greatly frightened, and not recovered from the fright. His countenance was anxious and unsettled, but not flushed or cadaveric. The predominant expression was that of extreme fright and terror. His eyes had a peculiarly unsettled but not wild expression. In a few seconds he was reconciled to our presence, but frequently sprung up to the sitting posture with a scream, and put his hand to his throat, as if he were choking, at the same time throwing his head up, as if he wished to inhale deeply. He would then handle or move the bed-clothes, but without any apparent determinate object; then sigh frequently and deeply, and become quieter. In a few minutes, again, the same was repeated. Sometimes he raised himself more than half out of bed, but raised his chin as if to lengthen his neck, and carried his hand to the throat and the breast. At these times there was an evident catch in the breathing, or difficult inspiration. There was in the intervals of these spasms of the throat jactitation of the body, and twisting of the mouth, particularly drawing down of the angle of the mouth on the same side as the bite. He very frequently gave something between a sigh and a moan; he retched occasionally, and brought up a frothy fluid like saliva, which was adhesive and stringy. Whatever he did was in a hasty manner; and his question, "*Fat*," Aberdonicè for *what*, when he did not understand us, was given in a startled way, not that he was frightened at us, but as if under fright from some other cause. On offering to touch him he started up to the further corner of the bed; but, in an instant, on telling him that we wanted to feel his arm, he put it out to us. The same took place on offering to touch any part of his body; but on coaxing him a little, he took my hand, and conveyed it himself first to his left arm-pit, and then to the back of his neck; but he had the greatest sensitiveness in regard to touch, and no deliberate examination of any part could be made from his restlessness and uneasiness. When questions were put to him, he spoke sensibly, but hurriedly, and always as if in alarm. He appeared to take no interest in the conversation we had with his mother as to the history of the case, nor to regard our presence or look much at us, the frequent paroxysms keeping him in a constant state of alarm and pain. There was no matter or inflammatory redness about the scars on the wrist. His pulse, as far as could be ascertained, was very weak and rapid, about 120; the skin was cool; he had made urine, and his bowels had been fully opened; he had vomited (he told Dr Cuddie) all his medicine. His mother stated that he had had a swelling in his arm-pit two or three days before, but, as far as he allowed examination, nothing of the kind could be felt. The blood taken in the morning was in a dark clot, and so soft that the probe could not raise it, but passed through it. A tin tumbler of water was offered him, which he rejected with a start; but on again coaxing him, he agreed to take a drink, provided he got a spoon and a plate. He then took two or three spoonfuls of the water into the plate, and took a spoonful of the fluid from the latter, which he swallowed. His hands shook much, and he darted the spoonful to his mouth suddenly, after having as it were made up his mind to swallow the water, but immediately after retching and vomiting took place.

Before we left him I poured some water from a height on the plate without his seeing me, and he instantly projected his hands in a supplicating attitude, with a countenance of extreme terror, and then buried himself under the bed-clothes. Dr Cuddie stated the symptoms to have been the same in the morning, but that the pulse was stronger and the spasms more frequent. In the evening, at half-past seven, he was taking some porridge and milk; but his pulse was scarcely to be felt; the skin was cold, and his face was congested. He was also somewhat delirious, and inclined to be talkative, and rather witty with Dr Cuddie, whom he best knew. He died about 11 in one of the paroxysms, according to his mother's statement.

The body was examined by the same parties, and Mr Fraser, surgeon, nineteen hours after death.

The throat, chest, abdomen, head, and spine were most carefully examined, but nothing particularly deserving notice observed. The tongue was indented on the sides by the teeth, and there was some adhesive mucus on the palate. The glottis and pharynx were natural. The spaces betwixt the rings of the trachea were somewhat vascular. The œsophagus was pale as usual, except close to the cardiac opening, where the tint was pinkish. The mucous coat of the stomach was marked by some spots composed of close red dots. The intestines, particularly the colon, were much distended with air, and giving out the smell of turpentine, of which he had an enema.

The lungs were rather congested. The heart contained semifluid blood in both ventricles. The liver was natural.

The kidneys were rather vascular.

The brain was natural; or if any change, it was that the great commissure and *corpora striata* were rather soft. Bubbles of air were observed in the veins; and not half-an-ounce of fluid in the brain. Some fluid was found in the theca of the spinal canal. The chord was in some places rather more vascular than usual; but as to this all were not of one mind.

The body was pale; the lips rather blue; the joints stiff. The largest scar was close to the wrist on its internal and anterior side. It was jagged and irregular on the edge. On laying open the part, it was found to be placed over the ligament binding down the tendons, and immediately over the ulnar nerve, but not penetrating to it. There was no purulent matter, nor signs of inflammatory action. The other scar was on the back of the metacarpal bone of the thumb, but was healed up, or left only a slight mark. It was found immediately over the posterior branch of the muscular spiral, but there were no appearances of the bite having gone through the cellular tissue. The nerves were perfectly healthy, and no appearance of any inflammation of the absorbents in the arms was recognized. There was no swelling in the arm-pit.

Case 2. G. G., aged 28, married, a stout, muscular farm-servant, was admitted into St Nicholas' Ward, about 2 P. M. on Monday the 12th August 1839, with symptoms of hydrophobia.

He stated that on the 7th of July, on attempting to tie up a dog, which was supposed to be unwell, he was bitten in the right fore-arm near the wrist, and in the fore and upper part of the right thigh. To both wounds caustic was freely applied soon after the injury, and they were then dressed with basilicon and poultices until they healed, which took place in about a fortnight. He then remained free from complaint, excepting a degree of weakness, until the 7th of August, (five days ago,) when he felt occasional sharp pains in the fingers and right arm, extending towards the *axilla*, with numbness and diminution of power in the whole extremity. He continued at his work, however, until Saturday the 10th, when the pain in the arm increased, and extended to his neck. He then applied for medical aid. He was ordered a dose of calomel and jalap, with a mixture containing *Mist. Camphoræ*, ℥iii.; *Solut. Muriat. Morph.* ʒi.*m.*, of which he was to take a table-spoonful occasionally.

On Sunday (11th,) he was restless from oppression about the chest, with some sense of choking. He had not taken the mixture as prescribed; the powder had operated well; the pain in arm was less severe, but the arm was still numbed. His appetite was good, and he ate on this night a hearty supper before going to bed. He had not been asleep long when he was awoke by an oppressive sense of choking, from a feeling as if a lump lay at his chest, with increased pain in the right arm, and which he distinctly described as extending to his throat and chest, with almost total loss of power of the extremity When he got up to drink some toast and water to quench his thirst, which was very urgent, he found he could not swallow it; and when he again tried and succeeded, the effort was followed by so severe a paroxysm of agitation, choking, and profuse perspiration, as, to use his own words, "almost destroyed him." He slept none after this, and continued restless.

When first seen on admission into the Hospital on the 12th, he was being fed by the nurse (out of a white vessel) with bread and milk, of which he was reported to have swallowed, though with difficulty, some spoonfuls. He complained much of want of sleep; was tranquil in manner; occasionally sighed deeply, but without irregular breathing; said the cold air annoyed him, and requested the door to be kept shut, and then gave the foregoing account of his complaint.

He expressed no disinclination to take fluids when offered him; but it was evident the resolution produced anxiety; and when the vessel was brought near him, his eye glistened, and his frame and manner became agitated and flurried, but without actual spasm. The impression on my mind at the moment was an unwilling compliance, or wished for evasion of the question, as he entreated in rapid succession not to be hurried; to give it in a spoon; and that it should be warm. Warm fluids produced less uneasiness than cold, and solids less than either. The cicatrices presented nothing unusual; they were very slightly tender, of a deep purple colour, without induration, and partially covered with a loosely adherent scale. Both arms were numbed, particularly the right or bitten arm, with which he is unable to lift any thing. He could, however, raise it to his head when requested. He had no numbness or uneasiness in the lower extremities. The pulse was about 100; tongue covered with a thick, tenacious, white coating, but moist; the body was covered with perspiration.

℞. *Camphoræ; Calomelanos* ā. gr. iii.; *Opii Pulv.* gr. i. *M.*
Ft. pilul. ii. *statim sumendæ.*

8 P. M. He had several short sleeps. From the first he awoke agitated and alarmed, from the others quietly. He took some warm bread and milk with a little difficulty, but shrunk from cold water. He thought himself not so well. Had frequent eructations during the visit, which, each time, was followed by a slight tremor and uneasy motion of his body. On requesting him to drink, he was thrown into violent agitation before it had approached him, attended with catching and deep hurried inspirations, and he begged us to desist. Shortly after this he swallowed one or two spoonfuls hastily, and with much difficulty, perspiration continuing profuse. The tongue and pulse were much as at last report. He was ordered two pills containing *Calomel.* gr. iv. *Opii,* gr. ii. *Camphor.* gr. iii. every four hours, and the following liniment to his back and breast; *Tinct. Opii,* ℥i. *Spt. Camph.* ℥ss. *Aq. Ammon.* ʒii. *M.* A turpentine enema was directed to be given.

August 13, 9 A. M. Had taken six of the pills ordered last night, and he had slept several times quietly though shortly until 5 A. M. when he took the last pills. Soon after this he was attacked with violent spasmodic retching, with a copious flow of glutinous frothy saliva from the mouth, mixed with dark streaks, apparently blood. He complains much of a disagreeable taste in mouth, with a sense of burning at epigastrium and throat. The breathing not so hurried or oppressed, neither has he the same dread of liquids, having, he says, helped himself to some cold water. A pill of croton oil and crumb of bread, ordered at 6 A. M., has only now been taken, after much persuasion and increased difficulty. Feels inclined to eat, but positively refuses to take more medicine. The enema produced no effect. Pulse about 120; tongue more furred; sweating still profuse.

Noon. He is reported to have taken some biscuit soaked in tea, with little difficulty, and continued quiet and tolerably comfortable until half-past 11, when the retching and flow of saliva returned. Has talked at times incoherently, affirming that he has been poisoned, and all around him have conspired to murder him. At present he is quiet, but his expression of countenance is more anxious; spoke sensibly; and, when requested, took a spoonful of water with less apparent reluctance and difficulty than last night; pulse 130. He was directed to have immediately a teaspoonful of laudanum, to be repeated every third hour; and a purgative enema. About an hour after this, whilst I was visiting the other patients in the ward adjoining his closet, he became violently agitated, threw himself about in bed, talking loudly and incoherently, while the frothy saliva flowed copiously from his mouth, but without retching. The perspiration run from his face. This attack appeared to have been brought on by an occurrence in the ward,—a patient having suddenly expired, whose last shriek he appeared to associate with the cry of his child, about whom and his wife he raved. The paroxysm soon passed off, and he became submissive, lay with his eyes half-closed, and swallowed a teaspoonful of laudanum with little persuasion or difficulty. In the afternoon had several similar paroxysms of agitation. The laudanum was repeated, but was immediately rejected. The pills and enema he positively refused. About 6 P. M. he vomited a considerable quantity of a blackish fluid, resembling coffee-grounds, after which he lay in a state of collapse for about five minutes, when the whole body, (right arm excepted, which was uncovered, and hanging over the side of the bed,) became cold, and covered with a clammy sweat. About 7 P. M. the same symptoms returned, with a similar termination, and again about twenty-five minutes to 8 P. M., when, at the close of the paroxysm, he ceased to breathe. In the intervals between the vomiting, he was at times composed, and spoke sensibly, but more generally raved on the old theme of being poisoned; but during the whole time he knew and called those around by their names.

An inspection was not granted by his friends.

Case 3. 2d October 1839. Mrs D——, aged 52, married, the mother of a family, and of sober and regular habits, but of a nervous temperament and easily excited, had been complaining of what she thought was a cold since the afternoon of Thursday, 26th September, on which day she received a fright from a cat destroying a favourite bird of her son's. On Saturday, the 28th, she was out at market; and on that day she told her family that she was dying, and requested them to send for medical advice to save reflections.

When visited on Sunday at 4 o'clock, she was found complaining of difficulty of swallowing, especially fluids, attended with occasional fits of dyspnœa, and inability of remaining at rest in bed. On offering her any thing, she felt a great sense of choking and suffocation, and she snapt at what was offered her, or took it in a hurried and jerky manner. She had a great terror at liquids, although she complained of much thirst. Her pulse was not quick, but weak; her mouth clammy.

On Monday (30th), she was in much the same state; slept very little, and when she did so, always awoke with a sense of suffocation. She preferred sitting up by the fire to being in bed. Bowels opened by laxative medicines. Had been ordered an antispasmodic mixture.

Tuesday (1st October). Spasms and excitement worse, but with difficulty had swallowed a little biscuit and tea. Was continually talking, but answered questions distinctly. Fancied she saw persons about her; had no sleep; had the same horror when any thing was put to her mouth, and snapt at it as before. At one o'clock she was in a convulsive fit, with twitchings of eyelids and cheeks, and mouth open, with the tongue partially protruded. She died at 3 o'clock, forty-seven hours from the period she was first visited.

The body was examined twenty-one hours after death. In the brain every part was natural, except that the left thalamus was internally of a slightly pinkish hue, and the consistence not, on the whole, so firm as the other one. The *velum interpositum* was more than usually vascular, and this state was very remarkable in the situation of the pineal gland. The veins in the *pia mater*, where it enters at the fissure of Sylvius, were very tortuous and large, but empty.

The viscera of the chest were natural. The only thing deserving notice in the abdomen was that the stomach was remarkably small. Its mucous membrane, and that of the œsophagus, were quite healthy.

On considering all that we had observed in this inspection, and taking the symptoms, a few of which had been mentioned to me by the medical gentleman who attended her, in our walking to the house, (the above history having been furnished by him the day after,) I was struck much with the case. From her peculiar temper it had been looked upon as a nervous affection, or a case of hysteria; but it was stated by the friends, that the woman herself was acutely sensible of her horror at liquids, and that she had repeatedly told them she could not take them, but would make the attempt, and that the manner she did so was such as to astonish them all. She had also complained much of the cold air when moving the bed-clothes about her; but they had not observed any thing particular in her appearance, nor heard her make any complaint on the door being opened. The husband also stated that she had retched often, and that what she brought up was froth and "like soap-suds."

I had observed a little dog on entering the passage of the house, and had asked them if the dog was theirs. The husband said that they had had a dog, but that it died about six weeks ago. They could not say what was the matter with it, but it drooped, and could not eat or drink, from its tongue being protruded, and so swelled that it could not get it back into its mouth. It was not vicious, and never had bit any one, nor been bit. In its illness it paddled with its mouth in water put down to it, but could not lap it up from the state of its tongue. It slavered much. The woman was extremely fond of it, and nursed it on her knee frequently. I examined her hands but saw no scratches or sores. On further inquiries being made at the husband and sons two days afterwards (the woman having been buried,) they stated that the dog had come home some time before its death, with a cut in its head, but whether by a dog or not they could not say; and they also stated that the deceased had a sore on her arm, which she was in the practice of making the dog lick, in the belief that the doing so would heal the sore.

It was apparent that the friends believed the woman's death was connected with the dog; but they wished it kept quiet, and it was with considerable reluctance they gave the preceding statement.

II. It has suggested itself to my mind from the number of cases I have seen, and the remark has also been made to me by one of my colleagues in the Infirmary, that there has been much more than the average number of cases of apoplexy during the last nine months. Hippocrates tells us in one of his Aphorisms, that apoplexies prevail in winter; and in another, that they are caused by rain. (Sect. 3, Aph. xvi and xviii). We have certainly had both cold and rain in abundance, and all those diseases which he states as being common to these states of the atmosphere have prevailed. But whether we are to attribute the frequency of apoplexy to these remote causes or not, perhaps the following cases will be admitted as confirming more directly the truth of another aphorism, which says, that to cure a vehement apoplexy is impossible, and a slight one not easy. (Sect. 2, Aph. xlii.)

CASE 1. Bell Mathison, aged 72, in the possession of good health, but subject frequently to cramps of the limbs, and occasionally, and at long intervals, to hemorrhage from the nose, at 10 o'clock in the morning of the 26th February 1839, spoke in her ordinary health to her neighbour in the next room. A few minutes afterwards she was found sitting or reclining backwards in her chair, with her legs extended and rigid, and the stocking which she had been knitting lying on the floor before her. She was quite insensible. She had vomited, and still attempted to vomit. A medical gentleman saw her at five minutes past 11, and found her lying in bed quite insensible, deprived of sensation and the power of motion, with the pupils immovable, very much contracted; the face pale; pulse full and slow; and the breathing stertorous. A vein was opened, and two or three ounces of blood flowed. She died in about a quarter of an hour after.

The inspection of the body took place fifty-six hours after death, in the presence of several of the medical gentlemen of the General Dispensary.

Head.—Dura mater externally natural; internally at the great fissure it was on both hemispheres firmly united to the arachnoid by lymph, apparently of old formation. The hemispheres on the external sides were of a blackish colour, this being more distinct towards the lower parts, and from the edge of the fissure down to the great commissure the same appearance existed. The upper parts of the hemispheres had numerous blue gorged veins. On raising the arachnoid at the lateral portions of the brain, it was seen that the discoloration arose from a layer of blood contained betwixt it and the *pia mater*. This blood extended also into the convolutions.

On separating the hemispheres, fluid blood escaped over the *corpus callosum*, and appeared to come from the anterior part of the great fissure, where there was much coagulated black blood. Coagulated blood also lay on the *corpus callosum*, and had raised the right hemisphere, where it overlaps it to nearly an inch. Both lateral ventricles were filled with black coagula, extending to all their cornua. On removing the rest of the brain from the skull, fluid blood was found in the spinal canal, and the whole of the under surface of the brain, as well as both surfaces of the *cerebellum*, were of the same colour, and from the same cause, viz. a layer of blood, in some parts thicker than others, between the two membranes. The quantity was most considerable on the *pons Varolii*, and anterior to it betwixt the *crura cerebri*. As far as seen, the spinal column was in a similar state. The third and fourth ventricles were filled with coagulated blood. The medullary substance of the brain appeared natural, and no fissure or rupture of it was observed, nor any cavity formed in it containing blood.

The internal carotid, at its entrance into the skull, was diseased, and a semisolid substance, like solid fat in consistence, *(atheroma,)* occupied its coats in patches. Where the anterior artery of the brain turns over the *corpus callosum*, and at the spot where a branch comes off from it to ascend on the plane of the hemisphere, there was a small tumour the size of a large pea, which appeared to have been an aneurism, and which had a rupture in it about a third of the size of its circumference.

The left side of the brain contained more blood, or was more marked by it than the right; and from the situation of the bed in the apartment, it was probable that she had been laid on her left side.

Chest. Two pounds of serum were found in the right pleural cavity; the pleuræ of the left side firmly adhering. The heart was above the full size; left ventricle hypertrophied; the valves were natural.

This was certainly a case of vehement apoplexy. It is somewhat remarkable by the rapidity of dissolution. Dr Abercrombie records a case (cxvi.,) where the patient, a female also, died within five minutes from the first seizure; but, with that exception, in all the cases given in his Pathological Researches, a much longer interval existed betwixt the seizure and death than in this case of Mathison. The case illustrates two other points that are now well known to pathologists, the precedence of disease of the heart, and still more disease of the arteries, to apoplexy. The vessels which were removed and dried, (the atheromatous substance into which their elastic coat had become converted being first pressed out) still exhibit the small aneurismal sac and the jagged rupture which had taken place in it.

CASE 2. John M'Donald, aged 60, cattle-dealer, was admitted into St Nicholas' Ward, on the 11th September, complaining of much pain in the head. He had walked to the hospital. He was cupped that afternoon. He was sensible and collected; but he is reported to have risen during the night after his admission, and walked about the ward, and then lay down again. At 6 in the morning he seemed as if in a sound sleep, and a little after 11 the nurse was aware of his being insensible. When seen by Dr Dyce at 12 o'clock, he was in a complete state of coma, lying on his back, and apparently wholly paralysed. The pupils were immoveable; the right eyelid was fallen down; the breathing was stertorous; and the pulse hard, full, and quick. No blood could be obtained from the veins of the arm, and the temporal artery was opened, and from 20 to 30 ounces of blood drawn. During the operation he vomited several times, latterly bringing up a dark-coloured fluid. The respiration became irregular, and the pulse flagged. He had one or two convulsions, and died at 2 o'clock.

Inspection.—No external marks of injury. The integuments were very vascular. The skull near the protuberance of the left parietal bone was of a dark mottled appearance; and on the internal surface of the bone corresponding to this the appearance was the same. The rest of the skull was natural in colour. In sawing the skull a portion of black fluid blood, amounting to about two ounces, flowed from the right side of the head, and when the skull-cap was removed, it was seen that this blood had flowed from under the *dura mater*, which had been pierced by the saw. The skull was remarkably thin. The membrane of the *dura mater* was healthy; but on the right hemisphere it was of a dark-livid colour, which, on turning it back, was found to arise from a large quantity of clotted blood, nearly half an inch thick, partly adhering to the *dura mater*, and shining through it. The *dura mater* on this side was flaccid, as if from the escape of some distending fluid, (the blood which had escaped.) The coagula did not extend to the falx, and occupied principally the superior and middle portion of the hemisphere, down to the middle depression in the base of the skull. The coagula were less on the anterior lobe, and the tentorium was scarcely marked by blood. The quantity with what had escaped might have amounted to six ounces. The veins of the *pia mater* were large, and much gorged with black blood. The coagula adhered with great firmness to the *dura mater*, and required to be scraped and washed off. The *pia mater* was stained of a dark-red colour, and on tearing it from the convolutions, the latter were in some places stained of a pinkish hue on the surface; but there was no effusion under the *pia mater.*

There was no blood in the ventricles, nor in the substance of the brain; but there were some small coagula in the *tuber annulare*, and one larger in the right *crus* of the *cerebellum.* The left side of the brain was healthy in every respect. There was no blood under the tentorium, and the cerebellum was healthy. The longitudinal sinus, and the right lateral sinus, which was here the largest, and ran in a groove betwixt the superior and inferior occipital depressions, were carefully examined, but no rupture could be discovered. The probe passed along some torn veins entering the longitudinal sinus; but these were probably torn in separating the membrane from the *pia mater.* Nothing unusual could be discovered in the line of the middle meningeal artery.

The viscera of the chest and abdomen were quite healthy.

It was reported by him that he had fallen on his head near the back part, having been thrown from a horse about three weeks before, and to this he ascribed a pain he had felt in his head since that time. I was sent to visit him a few days after an injury which, I was told, was from blows in a fight about three weeks before his entrance into the hospital, when I found him in a low lodging-house. He said he had much pain in the head, particularly in the region of the right parietal bone. He was quite collected, and without fever. I ordered him to the hospital, but he did not enter as a patient till the above date.

This is another example of vehement apoplexy, but attended with premonitory symptoms. The case was taken up by the fiscal, and the examination was made by order of the sheriff; but I could not ascertain whether M'Donald had been struck by any person, as he stated to me, or had got a fall, as he afterwards stated to Dr Dyce. Whence came the large quantity of blood in this case? No rupture of the sinus or of the meningeal artery could be discovered. Andral, in his Pathological Anatomy, speaking of morbid secretions from serous membranes, says, "sometimes the hemorrhage is so extensive as to constitute a serious disease, or even cause the death of the patient: thus some cases of apoplexy are owing to an effusion of blood into the subarachnoid cellular tissue of the convex surface of the hemispheres." But the quantity here was so great, that we could scarcely believe it to be the result of an effusion from the membrane; besides, the effusion here was in the sac of the arachnoid, and not in the subarachnoid tissue; and morbid secretions, at any rate, of blood, are rare from the free surface of this serous membrane. There are two cases, (cxiv. and cxv.) very similar in the morbid appearances recorded by Dr Abercrombie; and in neither of these was the source of the hemorrhage discovered. Ollivier gives a case where the meningeal vein was pierced by the thrust of a foil, with effusion of black blood, a little coagulated, over the entire lobes of the brain, as also at the base of the skull, where it was more abundant. Death took place in three hours after the occurrence of the accident. My opinion is, that, from the situation of the effusion, it was most probable that the hemorrhage had taken place from the meningeal artery or some of its branches, though we could not discover it. It is probable also, from the vessel furnishing it being small, that the effusion had taken place gradually, with almost no other symptoms than pain in the head, for he walked up to the hospital himself the day previous. Was the sudden supervention of the vehement apoplexy dependent upon this effusion on the surface, or on the effusion into the *tuber annulare*, or still more that into the *crus* of the cerebellum? It is generally taught that death more speedily follows rupture or compression about the cerebellum and base of the brain than in the hemispheres; and, judging from cases that are on record, the same applies to effusion upon, as well as in, the hemispheres. In the previous case of Mathieson, the blood, though abundant upon the hemispheres, had also made its way extensively to the base of the brain.

CASE 3. Mr ——, aged 64, of a frail habit of body, but walking about, though feeling occasionally some feebleness in his lower extremities, was turning the key in an outhouse on the evening of the 23d August, when he called for assistance, and was caught immediately in a person's arms. He was found to be deprived of all power of motion, and was carried into his house. When I saw him a few minutes after, his face was pale; both eyes were shut, but he opened them when roused; the skin was cold; the pulse 80, rather full; the mouth distorted; tongue drawn to a side, and partly hanging out of the mouth; breathing stertorous; the upper and lower extremities appeared equally affected on both sides with paralysis, but these were agitated by frequent starting or tetanic movements. When spoken to in a loud voice, he answered, "yes" or "no," but scarcely so as to be understood. The power of deglutition seemed entirely lost.

A vein was opened first in the one arm and then in the other; but blood flowed very slowly, and not above 12 ounces were obtained. During the bleeding, he vomited a quantity of what had formed his dinner, and his respiration became slow and irregular. A glyster of salts and senna was given, and a blister applied to the nape of his neck. The insensibility and coma increased, with more frequent startings of the limbs, and he died twelve hours after the seizure.

Inspection thirteen hours after death.

The *pia mater* was much injected, and in some spots, a lymph-like deposit under the arachnoid in the convexity of both hemispheres. The medullary substance was more than usually marked with bloody points when cut into. The lateral ventricles contained a portion of clear serum. The third ventricle was distended with reddish serum, the colour of which became deeper towards its inferior and posterior part, and the *iter a tertio ad quartum ventriculum* was distended with a clot of blood. Blood was effused under the arachnoid of the inferior surface of the cerebellum, more especially on the left side. The fourth ventricle was filled with black clotted blood, and the notch of the cerebellum, where it forms part of the walls of the ventricle, was torn, and the *calamus scriptorius* split longitudinally to the depth of some lines. The vessel furnishing the hemorrhage could not be discovered.

This case presented a symptom in addition to what existed in the two former, viz. the startings of the muscles, and which increased with the increasing pressure on the *medulla oblongata.* This is confirmatory, in some degree, of the opinion, that lesion about the top of the spinal column is attended with tetanic motions of the muscles. He was not deaf, nor was sensation destroyed, for he seemed to feel pinching, and especially the cutting of the veins of his arms. Deglutition was so much impaired that he could not swallow a drop of liquid. The respiration was irregular from the moment of the attack. Considering the situation of the pressure, deprivation of more of the senses might have been expected. I could not ascertain whether the sense of taste was lost or not.

The following, again, is an example of what has been termed simple apoplexy.

CASE 4. Mrs Cruickshank, aged 57, admitted into Mary's Ward, under Dr Dyce, in August last, with symptoms of apoplexy, for which she had been attended by one of the medical gentlemen of the dispensary, and been twice bled by him. She stated this as being the third attack, and that she had fallen down in them, and remained paralytic until she had been freely bled, and for some time after that, but locomotive powers had been restored. She had been for many years subject to a violent pain of the head, and her husband said that she often declared that something very unusual would be found in it on her death.

She died of an attack of influenza after entering the hospital.

Inspection.—The brain was unusually dry, but, on the most minute and careful dissection of all the parts of it, no appearance of recent or previous disease could be discovered.

The hopelessness of making a diagnosis from the symptoms as to the part of the brain which is the seat of lesion, is well illustrated to us in the two following cases, where we found almost the same lesion, but with how different symptoms.

CASE 5. —— Mitchell, aged about 12, was brought to the Infirmary on the afternoon of July 21st, in a state of stupor, and about two hours afterwards he had a convulsion. He continued in a state of insensibility during the night, but moaned and screamed often. In the morning, he rose as if to pass urine, and moved a step or two from his bed; but returned again, and at the forenoon visit, he was found lying as if in a profound sleep, with some convulsive motions in his face, strabismus, and his mouth at times drawn to a side. Pulse above 100, hard; had passed urine a little before involuntarily. The history of the case, as far as could be learned from his father, was that he was playing himself quite well the day previous, and, on the morning of the attack, he left him quite well in bed. He was found by the neighbours at three o'clock in the afternoon, with his head lying over the edge of the bed, and in a state of insensibility. He had never spoken. His head was shaved, leeches, blisters, turpentine enemata, &c. were used. His right arm became paralyzed, he sunk into a state of complete coma, and died on the morning of the 25th. It was discovered after his death that he had been a patient for several weeks in the hospital twelve months before, with an injury of the skull from a fall.

Inspection ten hours after death.

On removing the skull-cap, an old fracture was discovered on the left side of the *os frontis*, a little above the supraorbitary ridge. At the lower part of the fracture there was a projection of bone from the internal table of the skull, around which the *dura mater* was found strongly attached, and below the arachnoid opposite to this was a small quantity of purulent matter. A viscid lymph was effused on several parts of the surface of both hemispheres. The inferior cornua of both lateral ventricles were filled with a sero-purulent fluid. Purulent matter, in considerable quantity, was deposited around both optic nerves, and over the whole of the *tuber annulare* and posterior surface of the cerebellum. The purulent matter was placed between the *tunica arachnoidea* and the *pia mater*, and was creamy and thick.

Case 6. A woman, aged 28, had been a patient in the Infirmary, in September 1838, under Dr Dyce, with erysipelas of the head and face, followed by sloughing of the eyelids. The case was a protracted one; but, under the use of tonics, she recovered and was discharged. Three weeks after, she was readmitted with symptoms of common continued fever. Her chief complaint was pain of the head, especially of the forehead. She was quite sensible, and coherent in her speech, and would not confine herself constantly to bed, and she rose to her meals. Leeches were applied on her admission, and the next day she had much less pain, but the expression of her eye was unsettled, though she spoke quite collected. She rose and took her supper at night, and about midnight she was observed in a state of coma, and died in the morning.

Inspection.—The anterior lobes of both hemispheres were obscured by an intervening layer of a yellowish fluid, which was placed betwixt the arachnoid and the *pia mater*, and extended along with the latter into the convolutions. Both membranes were much thickened, and were easily peeled off from the brain. When held up betwixt the eye and the light, the yellow colour was very distinct, but the fluid was too viscid or adhesive to run out. The anterior lobes were united to the falx above, and to each other below, by an adventitious membrane, which allowed considerable stretching without tearing, placed above the anterior edge of the *corpus callosum*, and extending from that to the *crista galli*. The ventricles contained about two ounces of a whitish milky serum. The middle and posterior lobes were healthy. The pineal gland was imbedded in a thinnish purulent matter, as also were the optic nerves at their commissure; the posterior edges of both hemispheres of the cerebellum, and the *pons Varolii*, particularly at its anterior and posterior margins, exhibited the same yellow gelatinous like deposit as on the anterior lobes.

III. During last year two cases of tumours in the cerebellum occurred in the Infirmary.

Case 1.—Isabella Inglis, aged 26, admitted 20th July into Rachel's Ward, complaining of much pain in the head, especially in its posterior part. She is very deaf; temperature moderate; pulse 60; tongue brown and furred; was taken ill three days previously with shiverings, and yesterday had vomited a quantity of a greenish fluid. Bowels not opened for two days. Had not been exposed to any infection, nor to any unusual cold or wet. No exanthema on the body. The case was admitted as fever; but the state of the pulse, with increasing deafness so early, and disturbance of the cerebral junction, led to the suspicion of some previous mischief in the brain. She stated that her health previously was good, and that she was not subject to headachs; but as she became incoherent on the third day after admission, whilst the report states, "complains much of her head; pulse 64; no heat of skin; no petechiæ; bowels twice opened (by medicine); discharges natural; tongue loaded," application was made to her friends for more information as to her previous state of health; but they confirmed her former assertion that she had enjoyed good health. It is unnecessary to detail the case at full length from the daily reports. She at times lay in a state of coma for half a day or more, and that was followed by a period of excitement in which she spoke or sung incessantly. On the 29th, she quitted her bed in delirium. On the 1st of August the report is "sensible, and hears much better. Says the pain in her head is less. Pulse 108; tongue cleaning." The day following she is again delirious, with hot skin and quick pulse. On the 5th of August she is "at times delirious, with her pulse 90; no heat of skin; tongue moist." On the 6th, her bladder was felt distended, though it had been stated that she passed water freely. A catheter was immediately introduced, and 60 ounces of urine drawn off, when she fell asleep. Pulse 30; subsultus; died the day following.

The treatment consisted of repeated bleedings, blisters, and calomel and antimony, and latterly, anodynes, which quieted her, and wine.

Inspection twenty-eight hours after death.

Cranium.—Skull very thick; membranes natural; brain not much injected; three ounces of serum in the lateral ventricles. The *Foramen commune anterius* was so large as to admit the fore-finger. Walls of the ventricles softened and blanched. The *fissura magna Sylvii* on the left side united by firm lymph of a yellowish colour.

In the left lobe of the *cerebellum* at its posterior margin, and partly imbedded in its substance, there was a tumour or rather tubercle of the size of a walnut, of a firm cheesy texture with an uneven surface, and without any cyst or sac. It adhered to the *dura mater*, which, when the tumour was removed, was found to be rough and thickened. The cerebellum was healthy. About two ounces of serum in the base of the skull.

Pelvis.—The bladder was large, and contained fourteen ounces of high-coloured fetid urine. Its external coat at the fundus was of a deep red colour, interspersed with some livid spots; internally at the same part it was of a dark-red, and in some spots almost black. The preparation, which is in the hospital museum, still shows a layer of a substance like lymph, which adhered to the mucous coat over a considerable portion of the bladder. The vulva was of a dark livid colour. A few ounces of serum were contained in the pelvis.

This case was one of considerable interest and difficulty. Fever prevailed to a great extent through the town at the time, in many cases attended with vomiting in its early stages, and with the early occurrence of delirium; but in nearly all such cases there was the typhoid eruption on the surface. The belief of its being disease in the brain was entertained up to the period of the temporary recovery of intelligence and improvement of hearing; but on the relapse, with rising of the pulse, heat of skin, and the other symptoms of fever, the treatment was altered, in the view of its being not the epidemic typhoid exanthematous fever, but severe continued fever, attended with much nervous disturbance. The retention of urine in fever requiring the use of the catheter, more especially among females, was by no means unusual in the fever wards; but in this case, it is perfectly clear that that state of the bladder had been allowed to exist too long, and that inflammation of it was the result. Lallemand notices the same appearance of the bladder in similar cases. He says, "It is to the diminution of the sensibility that we must attribute the distension of the bladder, and the inflammation of its mucous membrane, observed so frequently in diseases of the brain and its membranes, when such diseases are attended with stupor, drowsiness, &c. After death the mucous membrane of the bladder is found injected and covered with patches or bloody points; the fundus of the bladder is often full of purulent mucus. The frequency of these inflammations, and the circumstances accompanying them, will not suffer us to consider them purely accidental. It is probable that they are owing to the long continued impression of the urine, which is already partly decomposed." It is not, according to his views, the distension which produces the inflammation, but the irritation of the urine which, in consequence of its long sojourn in the bladder, has become altered in its characters.

Case 2, Janet Bonner, aged 7, of unhealthy appearance, admitted, 1st April 1839, into Mary's Ward, under Dr Dyce, complaining of great pain in the head, principally in her forehead, and which is increased when she is in the erect posture. She had the pain in her head, and was unwell and losing flesh for the last six months. She lies with her eyes shut, and states that light, particularly that of a candle, hurts her. No heat of skin ; pulse 64 ; stools dark-coloured. On the 5th, she is reported to be sleeping much, complaining greatly of her head, face flushed, has had slight epistaxis, pulse quicker. On the 6th is in a state of drowsiness, like stupor, pupils much dilated, constant tremor of the arms, with disposition to scratch the skin ; no moaning, or screaming, or unnatural heat of skin. On the 7th she was more sensible and less drowsy, and answered questions distinctly, but slowly ; less tremor ; pulse indistinct. She died the same evening. The case was treated by leeching, blisters, and calomel.

Inspection fifteen hours after death.

Dura mater remarkably thin. Convolutions very flat, and not to be distinguished as convolutions, the sulci being gone. No serum under the arachnoid. The *pia mater* covering the hemispheres showed numerous ramifying arteries and dark loaded veins. The surface of the medullary substance presented numerous bloody points, and when the blood was wiped off, the medullary matter appeared as riddled with innumerable small but distinct holes, like pin-points in size. The *corpus callosum* was considerably arched. The lateral ventricles contained about four ounces of clear serum. The choroid plexus was not bleached, but firm and red ; and large arteries were observed ramifying on the *septum lucidum*, and extending into the inferior and posterior cornua. All the foramina of the brain were large. On the under surface of the left lobe of the cerebellum, there was a tubercle of the size and shape of a large walnut. Externally it was firm, and internally presented a yellow cheesy consistence. The substance of the cerebellum surrounding it was in a state of softening. There was serous fluid in the third and fourth ventricles.

In this case the morbid action had been continuing for a longer period, and the consequence of the irritation of this tubercle was, as usual, softening of the nervous substance around it. In neither of these cases is it stated that there were convulsions, though my impression from memory is, that the nurse stated that Inglis had convulsions some hours before death. In Dr Dyce's case there were no convulsions, the utmost irregularity of muscular motion being tremor of the arms.

The two following cases I did not see ; but the histories and the morbid parts which had been removed were given to me by the medical gentleman who attended the patients. I examined the large tumour in the first case, being still in my possession. The one illustrates a disease that is not uncommon in children of such a diathesis; the other is an example of the same in the adult. The symptoms were milder in the young patient, perhaps as much from the more gradual enlargement of the tumour as from the sutures yielding.

Case 3. A boy, aged 3 years, of a scrofulous diathesis, had an attack of a pulmonary complaint which confined him to bed for nine weeks, and left him in a state of great debility. Some time afterwards he had an attack of nausea and vomiting, with much derangement of the bowels. In December 1838, he began to complain of pain in the back of the head and in the epigastrium. His head was evidently enlarged, he had difficulty of supporting it, and it hung rather to one side. The sutures were separated; tongue foul; bowels very irregular, at one time much constipated, and at another loose, with fetid discharges. His intellect corresponded with that found in one three times his age. On the 30th of December, a degree of hesitation and indistinctness in articulation was first observed, and, on the 2d of January, his left arm was in a state of constant tremor, amounting almost to convulsive motion. Holds his head to the right side, and complains much of pain behind and below in it. On the 14th, he was rolling his head much, vomiting, and passing stools involuntarily. General paralysis now took place, and continued to his death.

Inspection.—The head was much enlarged, and the sutures open. A considerable quantity of serous fluid was found in the arachnoid, ventricles, and base of the brain. The surface of the left hemisphere was evidently raised by some rounded solid body contained in it. The cerebral substance was soft and pulpy on the surface, and more so internally, where it surrounded a solid firm tumour, in shape and size like an orange, which occupied the whole of the middle lobe, and extended into the anterior and posterior ones. The *corpus striatum* and *thalamus* of that side could not be distinguished, the whole being converted into a soft pulpy substance, out of which the tumour was easily turned. Its surface was irregular, with several small tubercles or knobs.

In consistence it is firm and cheesy, except for about half an inch in its centre, which is soft and curdy. The centre is of a yellowish tint, that outside of it white. Its weight is three ounces, its diameter two inches and a half.

Case 4. —— Falconer, aged 24, married, but has had no children, was entered, in December 1834, as a patient at the Dispensary under Dr Leslie. She complained of a dull pain in the head, which was constant, but at no time acute. She attributed the pain to her menses being obstructed. Aloetic medicines were freely used, which brought on menstruation; but in a short time she was seized with a smart attack of fever, in which the head was principally affected. She was largely bled from the arm, leeches were applied; the head shaved, and cold lotions applied to it, and a blister to the nape of the neck. She got rather better, but still complained much of her head. The pupils were contracted, and her pulse slow and full. She was bled again, tartar emetic rubbed into the scalp, and she took a considerable quantity of calomel and opium without affecting her mouth. As she lived in a low damp house, and would not submit to be cupped, she was sent into the Infirmary, where she remained for four weeks and two days. On her dismissal she applied again to the dispensary. The pain in the head was now more severe, and attended with dilated pupils, loss of vision, mouth drawn to one side, and furred tongue. She screamed and moaned frequently, was often insensible, and had frequent epileptic fits. Her bowels were remarkably obstinate. She died in a convulsion.

Inspection.—The calvarium was exceedingly hard and brittle, and of variable thickness throughout, being in some parts not thicker than a shilling, while in other parts it was fully half an inch thick. Internally, the surface of the bones was remarkably unequal and rugged, being traversed in all directions by very prominent ridges, and thickly set with long sharp processes, especially towards the frontal bone and the anterior portions of the parietal bones, and in the orbital plates, in which last place these processes had a close resemblance to the spines of the bramble. With the exception of a few osseous scales adherent on the *dura mater*, this membrane was in its usual state.

The convolutions of both hemispheres looked flattened and compressed, with pits here and there on their surface, corresponding to the projections from the bones. In place of the optic *thalamus* and *corpus striatum* of the left side, there was found a tubercle as large as an ordinary sized egg, to which the choroid plexus and *tela choroidea*, both much enlarged and thickened, adhered firmly, forming as it were for it a partial cyst. The tubercle when cut into was of a dirty yellow colour, and nearly as hard as cartilage. The cerebral substance, for nearly two inches external and anterior to its situation, as well as that forming the roof of the ventricle, was reduced to a pulpy fluid of the colour and consistence of custard. The choroid plexus contained a spherical body, full of an amber-coloured jelly. The posterior lobes of the same hemisphere were one mass of tubercles of various sizes, from that of a pea to the bulk of a walnut, bound together by a strong vascular membrane, and floating in a fluid similar to that which I have mentioned. The right ventricle contained about one ounce of turbid serum; but, with the exception of the thalamus, which was almost entirely destroyed, (as if from ulceration), no other morbid appearance could be detected in the right side. There was a good deal of gelatinous effusion in the base of the brain, and also on the cerebellum. In the superior vermiform process a tubercle was imbedded, somewhat larger than a filbert, and of the same character with the rest.

This, as far as my recollection at present serves me, is an example of more extensive disease in the brain than any that I have read in any author. Whilst she was in the hospital the case was suspected to be hysteria, to which the symptoms at that time present, according to the report, had some resemblance. But I believe she was ultimately dismissed as incurable.

IV. It is generally stated that atrophy of the optic nerves, in cases of blindness, whether in one eye or both, is seldom found but in the space betwixt the retina and the commissure of the nerve; and Andral says, that not only is its bulk diminished, but that "its medullary substance disappears, leaving in the interior of the nerve a grey semitransparent substance;" * * * * and that, "according as the nervous substance thus disappears, the neurilema acquires greater thickness and consistence, which gives the nerve the appearance of a fibrous or almost cartilaginous chord; in other cases nothing of the kind occurs, and instead of the nerve, we find merely a membranous sheath, with thin transparent parietes, containing a semifluid cellular substance;" and again he says, "as to the thalami they are very seldom altered, even when the optic neves are in the greatest state of atrophy." Now the following case would point out another state, a softening of the nerve in its entire substance and length, with the same disease in the thalami.

James Fraser, aged 37, was admitted into St Luke's Ward, September 22d 1838, with chronic dysentery. It is unnecessary, at present, to state at length his case or all the *post mortem* appearances, as it will-be more appropriately given in a subsequent paper; but it may be mentioned that he had incomplete paralysis of the bladder, and that he was to some extent affected with paralysis of the limbs, such as is seen in those who have, like him, lived hard and drank much spirits. He had been blind for three years.

Inspection.—Adhesions were found betwixt the *dura mater* and arachnoid; the subarachnoid tissue hypertrophied, and the *tela arachnoidea* in consequence easily dissected from the *pia mater* over all the surface of the brain. The optic nerves were of a pearly or slightly yellowish appearance, flat and thin like bands or tape, much diminished in size, and their commissure was soft with some liquid in the centre of it. They were traced of the same consistence and appearance into the thalami, which were also softer than usual.

V. The publication of Dr Conquest's cases of tapping the brain in chronic hydrocephalus will have no doubt induced many practitioners to adopt the same treatment in that most deplorable complaint. The two following cases will serve as illustrations of the little trouble which the operation gives to the patient, and also of the fact, that 99 of the 100 cases in which it has been tried will prove the total want of success.

Case 1. Catharine M'Donald, aged 2 months and 11 days, was admitted into Magdalene Ward, 7th March 1839, with chronic hydrocephalus. Her mother had an attack of small-pox four months before the birth of the child, and is deeply scarred. The child went to the full time, and when born had three distinct pits on the left side of the face, which still exist. The swelling of the head was observed immediately after the birth, and the mother attributes the disease of the child to her (the mother) having had the small-pox whilst pregnant. The head has gradually increased, and at present measures 20½ inches round, and 12½ across from ear to ear. The bones are widely separated, and the feeling of fluid is very distinct to the fingers. She does not appear to have any defect of the senses, at any rate she sees well enough, and starts when any sound is made beside her, and cries when pinched. Sucks well; flesh in good condition; and the bowels are regular.

10th. Has been taking the *hydrargyrum c. creta* since admission yesterday. A puncture was made with one of Dr Conquest's trocars on the right side of the head, half-way between the ear and the usual situation of the anterior fontanelle; and fifteen ounces of a clear, transparent, colourless fluid came off in a full stream. As the stream of the fluid began to diminish in force, the infant got pale and faint, and vomited a quantity of milk. The wound was closed on the canula being withdrawn by adhesive plaster, and the head, which had been compressed by the hands of an assistant during the escape of the fluid, was endeavoured to be kept in the diminished volume by broad strips of adhesive plaster put round it, and over these a roller. On applying her to her mother's breast she sucked readily. At 7 o'clock that evening, she was vomiting occasionally but had slept. To-day is lying on her mother's knee quite quiet, and looking at objects with the intelligence of one some months older. To have two grains of mercury with chalk night and morning.

18th. The head measures 20 inches round, and 11½ across. The child is lively and in good health.

25th. Head punctured on the 23d, and ten ounces of fluid of the same character as before drawn off. The child vomited as before, and when the straps and bandages were applied, it soon fell asleep. In the evening, it was laughing and sucking. The measurement previous to the operation was 21½ inches round, and 12 from ear to ear. The fluid drawn off was of the sp. gr. 1015, and, according to the tests applied by Mr Shier, gave an alkaline reaction, and contained chlorine of sodium in considerable quantity, and albumen, but not in large quantity, yet sufficient to give the characteristic precipitates with the usual reagents.

April 2d. Head punctured yesterday, and 11 ounces drawn off. Child rather restless during the night, but quite lively to-day; was taken home a few days afterwards.

April 26th. Head 22 inches round, and above 10 across. It was tapped, and 15 ounces drawn off, the wounds being closed as before when the child began to vomit. It was taken home the same afternoon.

The next entry in the case-book is 21st August. The child has been several times brought up to the Infirmary for inspection. She has got two teeth, and, at the time of their cutting, its health was considerably deranged; but she is at present in good health and flesh, and possesses her senses, the eye being particularly lively and sharp. The head measures 26¾ inches round, and 17 across from ear to ear.

I have not thought fit to repeat the operation. It was attended with no benefit before, and I firmly believe would be attended with none, even if repeated weekly. The child had every justice done it, along with the operation; that is to say, mercurials were persevered in, iodine ointment was applied to the head, and compression with adhesive straps adopted.

Anceps remedium melius quam nullum is an old remark; and there may be cases in which the operation will be successful, as there have been in Dr Conquest's hands. Where the fluid is in a cyst; where it is contained in the sac of the arachnoid; where it occurs some months or years after birth, let it be tried; where the fluid is in the cavities of the brain, where the nervous substance forms, as I have no doubt is the case here, and was in the one about to be related, and has been in every case of decided chronic hydrocephalus in which I have had examinations after death, a capsule of half an inch, or a few lines thick, inclosing water, in the bottom of which, at the base of the skull, there may be seen something like indistinct traces of some of the parts of the brain, as named by anatomists;—the operation is and must be of no avail. What Dr Ferriar said of the use of digitalis in phthisis, that "the extensive mass of disease, and the strange formation of new morbid parts discoverable in the lungs, would require for its amelioration, an effort of the power which originally created the living body," may be as truly said, by those who have seen the nearly complete annihilation of brain in chronic hydrocephalus, of the value of this operation. The woman carrying the child to full time, during what appears to have been a severe attack of small-pox, and the pits upon the child at birth, are worth observation as rather unusual circumstances.

CASE 2. Alexander Dow, aged 8 months, was admitted, 7th April 1838, into Dr Dyce's ward, with chronic hydrocephalus, which commenced when he was ten weeks old, previous to which he is reported to have been quite healthy. The swelling has increased rapidly of late, and he has been repeatedly blistered for it. The head measures 22½ inches round, and 14½ inches across from ear to ear. Eyes constantly rolling, but its mother affirms it sees. Bowels regular. Appearance of child otherwise tolerably healthy, and flesh not flabby. Has two upper incisor teeth, which he cut easily about a month ago. He never had any convulsions.

On the 12th, the head was punctured, the trocar being pushed about an inch into the brain, in the site of the left coronal suture, and midway between the fontanelle and upper border of the ear, and 20 ounces of a clear fluid withdrawn, after which the head was tightly strapped in different directions, and a bandage applied. On the 13th it is reported that he had vomited twice in the previous afternoon, and cried violently. The vomiting was in part attributed to the circumstance of his mother cramming him, in spite of all entreaties to the contrary, with food. On the 16th, he was hot and feverish. On the 17th, the size of head was nearly as before, and he was passing greenish stools. On the 22d, he had some slight appearances of convulsion. By laxative medicines, his stools were improved, and the feverishness removed, and on the 28th, the head being as large as before, the operation was repeated, and 23 ounces of fluid of a darker colour drawn off. The child vomited during the bandaging of the head, but appeared to suffer no other uneasiness.

On the 6th May the report states, that he "has not appeared to have suffered in any way since last report. The integuments have remained much longer flaccid than after the first operation, but the fluid has evidently more rapidly collected within the last two days. Intelligence improving."

On the 12th, the brain was again punctured in the corresponding part on the right side, and 22 ounces drawn off without producing any unusual symptom in the child. The scalp was more flaccid than on any former occasion, but evidently contained more fluid than could be drawn off.

On the 19th, the puncture was repeated, and 19 ounces of turbid reddish coloured fluid drawn off without producing any faintness. The head on both occasions was treated as before. On the 29th, the head was only half an inch less than before the first operation. The treatment was after this confined to mercury. On the 1st of June, the head was as large as at first. On the 2d, the child was moaning and crying much, with a faint voice and frequent fits of difficulty of breathing. There were spasmodic contractions of the limbs. The pulse was nearly imperceptible; he refused all food; and died next morning.

Inspection.—The *dura mater* being exposed was cautiously punctured, and, as fluid escaped, it was freely laid open from before backwards, and about 90 ounces of a clear straw-coloured fluid collected. Until this was removed, no part of the brain could be seen, when, in the middle of the base of the cavity, two large prominent white bodies were seen, and connected with their posterior edge, two others of much smaller size, resembling red currants; these latter proved to be the choroid plexus contracted as described, while the former were the thalami. The left side of the cranium was completely devoid of brain; and the only remains of that hemisphere were found lying on the *tentorium cerebelli*, and consisted of a small attenuated portion of the anterior lobe, connected by a few shreds of medullary matter to the left thalamus. The outer surface of this portion was white and smooth, and, on being turned over, was found to correspond with, and to be, the outer wall of the ventricle, which had probably become reversed from its proper situation, when its support (the water) was evacuated. The falx, instead of its natural position, was found attached low down on the right side of the skull, close on the fibrous portion of the temporal bone, and stretching horizontally onwards towards the middle of the base. The *dura mater* was diaphanous, and perforated in several places, and no appearance of longitudinal sinus could be seen. On raising it, the right hemisphere became visible. It was compressed, but each lobe was entire. The left olfactory nerve was gone; the right nearly so, only a few fibres remaining. Both optic nerves were ragged and fibrous, and of a mixed brownish colour. The other nerves presented nothing unusual. The cerebellum was natural. The lateral sinus unusually large. No water in the spinal canal.

In the first of these cases, 51 ounces of fluid were removed at four operations; and in Dr Dyce's case, 84 ounces were taken, at the same number of times, which I believe is a larger quantity than in any other case on record.

Art. IV.—*Remarks on Collapse occurring during the treatment of Acute Pneumonic Diseases.* By William Kerr, Surgeon, Corresponding Member of the Medical and Physical Society of Calcutta.

The object of the following remarks is to call the attention of the medical public to a dangerous train of symptoms immediately succeeding, in some instances, the inflammatory stage of pneumonia and pleurisy. In those to which I allude, a state of sinking suddenly and unexpectedly occurs within a day or two after the removal of the pain, when the patient is much easier, and apparently about to be, in a short time, restored to health. The cases which I shall relate, were not originally intended for publication, and probably would never have been printed, had I not found, from conversation with several gentlemen of considerable celebrity in the profession, that they were ignorant, not only of the treatment, but of the occurrence of the above dangerous attendant upon acute pneumonic complaints. With this apology for cases which do not possess the copiousness of detail I could have wished, I proceed to relate them, hoping that they may at least serve as guides till farther and more minute observations are made.

1. A message was sent to me one evening in the end of March 1836, requesting a visit to a very respectable and temperate-living weaver, 50 years of age; but, owing to other engagements, I was unable to see him till next forenoon, when I found him complaining of severe pain in the right side of the chest, preventing him from lying in the horizontal position in bed, and aggravated by inspiration and coughing. He said that he had been very ill all night, and wearied very much to see me. The pain had come on some days previously in consequence of cold, but had not acquired much severity till twenty-four hours before my visit, about which time cough commenced. I immediately opened a vein, and abstracted sixteen ounces of blood with such great and immediate relief, that I flattered myself that the disease was subdued. I gave a dose of calomel, which I happened to have with me, and paid attention to secure a comfortable warmth of body, a flannel jacket being put on, and a small jar filled with hot water laid to the feet.

Next day, the pain having returned during the night, I again bled him to the extent of sixteen ounces, with immediate relief. However, in a few hours, there was a return of pain, but in a very mitigated degree, for which a blister was applied. Next day he was better, though not free from pain; next again, he was so well that, on entering the house, I found him its only inmate, his wife having gone out for a short time, thinking that he now required little attention. Previously to this day, his breathing during sleep was always oppressed, but it had now become easy. During the whole illness, however, he had little sleep. On the succeeding day, the fifth of my attendance, to my astonishment, I found him much worse, his pulse frequent, and his manner abstracted, like that of a patient in typhous fever, to which disease the symptoms now bore a strong resemblance. In the evening, he began to be incoherent. Next afternoon, he was quite insensible, and unconscious of being in existence. Bewildered with symptoms which I did not anticipate or comprehend, I knew not what to do, and in twenty-four hours he died.

2. On the 2d of August 1836, I was sent for in haste to visit a farmer, of most exemplary and temperate habits, 58 years of age, who had gone that evening to drink tea with another farmer, fully more than a mile from his own house. After tea, while walking in the fields with his friend, he was seized with pain in the left side of the chest, which was so severe that it was necessary to convey him to the nearest house, where I found him awaiting the arrival of a carriage. The pain soon abated very considerably, and on his way home he expressed himself as being much better. On getting to bed care was taken to clothe him in flannel, and to apply bottles or small jars filled with hot water. Notwithstanding these, however, the pain suddenly became violent; it was not accompanied with cough, but it rendered inspiration or the slightest movement of the body very painful, and prevented him from lying on the affected side. I now opened a vein, but the result of last case having made me timid, I abstracted scarcely a soup-plateful of blood, with very little mitigation of the pain. To remove the remainder I gave a dose of opium, which was repeated during the night, but without benefit. His bowels were kept open by purgatives and enemata. Two sinapisms and a blister were applied likewise inefficaciously, and he died about 84 hours from the commencement of the illness. About a day or rather more before death the pain somewhat abated, but the breathing became more frequent, and the oppression greater. From the commencement of this period, he expressed a wish to be allowed wine, in which he was indulged to the extent of three or four wine glassfuls. Incoherence was at no time present. During the whole illness, though slumbering occasionally from the few doses of opium administered, he could not be said to sleep. On the day of his death he was able for the first time to lie on his left side, and imagined himself to be better.

3. On the 17th of June 1837, I was sent for to visit a farmer, 41 years of age, of temperate and steady habits, and previously in good health. I found no decided symptom of any complaint. He felt himself unwell, his body generally pained, and his appetite bad. These he atrributed to cold caught two days previously by standing still in the evening air without his coat in a state of perspiration from hard work, talking for a considerable time to a friend. I caused him to take a purgative, to put on a flannel jacket, and to go to bed with a jar filled with hot water at his feet. Next morning a messenger was sent to inform me that severe pain in the lower part of the left side of the chest had come on during the night. I directed one grain of opium to be taken, and a mustard cataplasm to be applied immediately. Two hours

afterwards I visited him, and found that he was not in any measure relieved. The pain in the chest was severe, preventing free inspiration, and obliging him to lie on the opposite side, and was attended with cough, by which it was greatly aggravated.

Suspecting that in the last case the inflammation had never been so completely subdued as it should have been, owing to timidity in taking away the requisite quantity of blood, and that, in the first case, I had possibly taken too much, I began to be of opinion, that the fatal sinking which so unexpectedly followed the abstraction of blood might perhaps have been remedied, had stimulants been given freely whenever the change of symptoms appeared. I, therefore, determined in the present instance, to put a stop, if possible, to the inflammation in as short a time, and with as little loss of blood as possible, and to give wine liberally, as soon as any degree of delirium should appear. Accordingly, I opened a vein, and abstracted nearly a soup-plateful of blood. Finding at the end of an hour that the pain was mitigated, but not removed, I re-opened the wound, and allowed more blood to flow till he had lost altogether 24 ounces. This abstraction of blood gave great relief, and after having waited for several hours, I left him, satisfied with the result of the treatment. Next day the pain was quite trifling, though still felt, and he was evidently much better. On the succeeding day, the 21st, the pain not being wholly gone, tartar emetic was given in small doses, but it having sickened him, he refused to persevere in its use. A grain of opium was given at bed-time to procure sleep. Indeed, since he began to be indisposed, he had slept ill. In the morning of the 22d, a purgative which he had taken operated six or seven times, and feeling himself, as he imagined, much better, notice was sent, at his request, that I might dispense with visiting him that day.

Aware, however, of the deceitful nature of the disease, I disregarded the message, and on my arrival found him complaining peevishly of the opium having produced a restless night, and uneasy dreams, and some of his expressions were decidedly incoherent. His pulse likewise was frequent. I now learned that since the evening of the 19th, he had talked incoherently when slumbering, and that since the same time, he had manifested a good deal of obstinacy and peevishness. He had had no appetite since the day of my first visit. I ordered a glassful of wine to be given at least every three hours, and gave ten drops of Battley's sedative liquor of opium, which I happened to have with me, to be repeated every six hours till sleep should be procured. After commencing this treatment, I left him for two hours, and on my return, found the frequency of the pulse somewhat lessened. On the 23d, I was informed that sound sleep had not come on till after the third dose of sedative liquor, but that since that time he had slept with little intermission. He relished the wine, and had taken it as directed. This night he slept without opium; next day he was only slightly incoherent. By the 26th, he had some appetite, and swallowed a small quantity of beef-tea; by this time, too, he had little relish for wine, but the symptoms being greatly improved, it was not considered necessary to urge him to take much, and not many days afterwards, he ceased to take any. On the 1st July he was so much better, that I discontinued my attendance. For a long time after he began to go about, he had rather a feeble appearance, and did not regain his original strength till he had recourse to several glassfuls of wine daily for some weeks.

4 and 5. Besides those cases which I have now sketched, I have heard of a few of the same kind, in which the patients after having been bled with relief, sunk suddenly, and not long ago I met with two instances in which recovery took place in consequence of stimulants being given freely as soon as symptoms of sinking occurred, after the removal of the inflammatory symptoms by blood-letting. One was a middle-aged servant maid, in whom the primary disease was pleurisy, which was followed by a large abscess or empyema in the left cavity of the pleura, which ultimately burst into the bronchiæ. The other was an elderly gentleman, whom I saw in consultation, and to whom wine was given in quantities of a wine-glassful every three hours, but not before the raving had terminated in very considerable insensibility. Wine, together with small draughts to procure sleep, and a well-aired room, had the desired effect, and a perfect recovery ensued.

I do not suppose that the sinking now described is confined to pneumonic affections, but possibly may follow other inflammatory diseases if the severity of the attack renders necessary the abstraction of a greater quantity of blood than the constitution can support. Several years ago I had charge of a case of enteritis, in which, owing to two severe attacks occurring in less than a week, I deemed the loss of a considerable quantity of blood requisite. Typhoid symptoms soon followed, and I not being at that time aware of the appropriate treatment, the patient died after having been incoherent, and latterly quite insensible.

16*th May* 1839.

Since the preceding remarks were prepared for press, I have met with another case in which, soon after blood-letting for acute pneumonic symptoms, sinking occurred, which was checked, and recovery produced by the prompt and liberal administration of wine.

6. In the end of May, a gentleman, 24 years of age, was seized with pain in the left side of the chest, which at first seemed to be of a spasmodic nature, and diminished greatly under the

use of opium, and the application of warmth. Opium was required for three days, but on the fourth, the pain was so much easier that he did not take any. On the fifth, he felt some pain in the left side of the chest, impeding coughing; at night this suddenly increased to such an alarming degree, that he durst hardly cough, and was obliged to lie on his back, having his head and shoulders considerably elevated ; still the expectoration had no reddish tinge. Pulse 120.

This patient had for several years been confined with phthisical symptoms arising from disease in the right lung, and he had not till within a year or two recovered any measure of health. On this account scarcely more than ten ounces of blood were abstracted. The pain was immediately relieved so much, that he could lie in the recumbent position. The blood on cooling exhibited a buffy coat. Notwithstanding this relief he was through the night very restless and uneasy. In the course of the following day, opium was given to allay these symptoms, but with only imperfect success. Next morning, 36 hours after the blood-letting, learning that he did not enjoy above five or ten minutes sleep at once, and that he was incoherent for some time after he awoke, symptoms which occurred in the early stage of sinking in the other patients, wine was prescribed in quantities of a glassful every three hours. He was still not altogether free from pain in the chest, and the cough would have been very troublesome, had he not taken opium. Pulse 126; there was considerable thirst, but the tongue was not dry. In the course of the day, after commencing wine, he was observed to sleep longer, and to be less incoherent on awaking. Next morning the pulse was 116; he relished the wine, and felt stronger. On the succeeding day the pulse was 104, and the incoherence gone; the wine was still relished, and taken in the same quantities. At the end of a week he was so much better, that the doses of wine were greatly diminished.

In the summer he went to the sea shore, where he became strong enough to walk out of doors daily. In the beginning of winter, cough became more troublesome, and he was under the necessity of confining himself to bed. Nearly three months ago, a small abscess formed over the original site of the pain in the right side, and was opened, when purulent matter was discharged of the same appearance as that expectorated. This new outlet has been of much utility, for since it took place, the quantity of purulent matter secreted has progressively diminished, and is now so much lessened that the wound is nearly closed.

Paisley, 9th January 1840.

Art. V.—*Case of Adipose Sarcomatous Tumour in the Anterior Mediastinum, with Remarks.* By J. Moore Neligan, M. D., Cork. Illustrated by an Engraving.

George Attenborough was admitted into the county Tipperary Jail Hospital at Clonmel, April 30th 1838; a private soldier of the 19th Regiment of foot, aged 21, with light hair and delicate complexion, slender in person, and a narrow contracted chest. He complains of a difficulty of breathing, with some pain in his chest, which is not increased on taking a full inspiration. Has had cough without expectoration for the last three months, and which affected him principally on rising in the morning, and for some time afterwards. There is dulness on percussion in the infra-clavicular regions on both sides, and the respiratory sound is somewhat bronchial.

On admission a blister was applied to the sternum, and he was ordered a mixture containing tartrate of antimony in solution.

May 5th. Since last report he has continued to amend, and the pain of chest and difficulty of breathing have nearly disappeared. Ordered to use the tartar emetic ointment night and morning, until an eruption was produced on the chest.

May 7th. This morning Attenborough drew my attention to a tumour, which he said he had perceived for the first time on the previous evening. It was situated at the top of the sternum, filling up the space between the sterno-clavicular articulations, and about the size of a large walnut. As he was of a scrofulous habit of body, and the swelling had the appearance of a glandular enlargement, I ordered him to take twenty drops of the tincture of iodine three times daily, and to rub a small portion of the following ointment over the swelling night and morning:

℞ *Iodinii grana duodecim; Hydriodatis Potassæ, drachmam unam; Adipis præparatæ, sesquiunciam. M.*

May 12th. Since last report the swelling has considerably increased, and the alæ of the thyroid gland are very much enlarged. He complains that the difficulty of breathing has again returned; but says that it is not caused by the swelling, and points to a spot over the *os hyoides*, as the place where he feels the obstruction to exist. He also says that he finds great difficulty in swallowing, particularly liquids.—*Continuentur medicamenta.*

May 14th. Six o'clock A. M. I was sent for to see Attenborough, as the nurse thought that he was dying of suffocation. On arriving at the hospital I found him sitting up in bed gasping for breath; the veins of the face and neck swollen, the extremities cold, and the pulsation of the radial artery at the wrist to be felt with difficulty. I immediately proposed opening the larynx; but he re-

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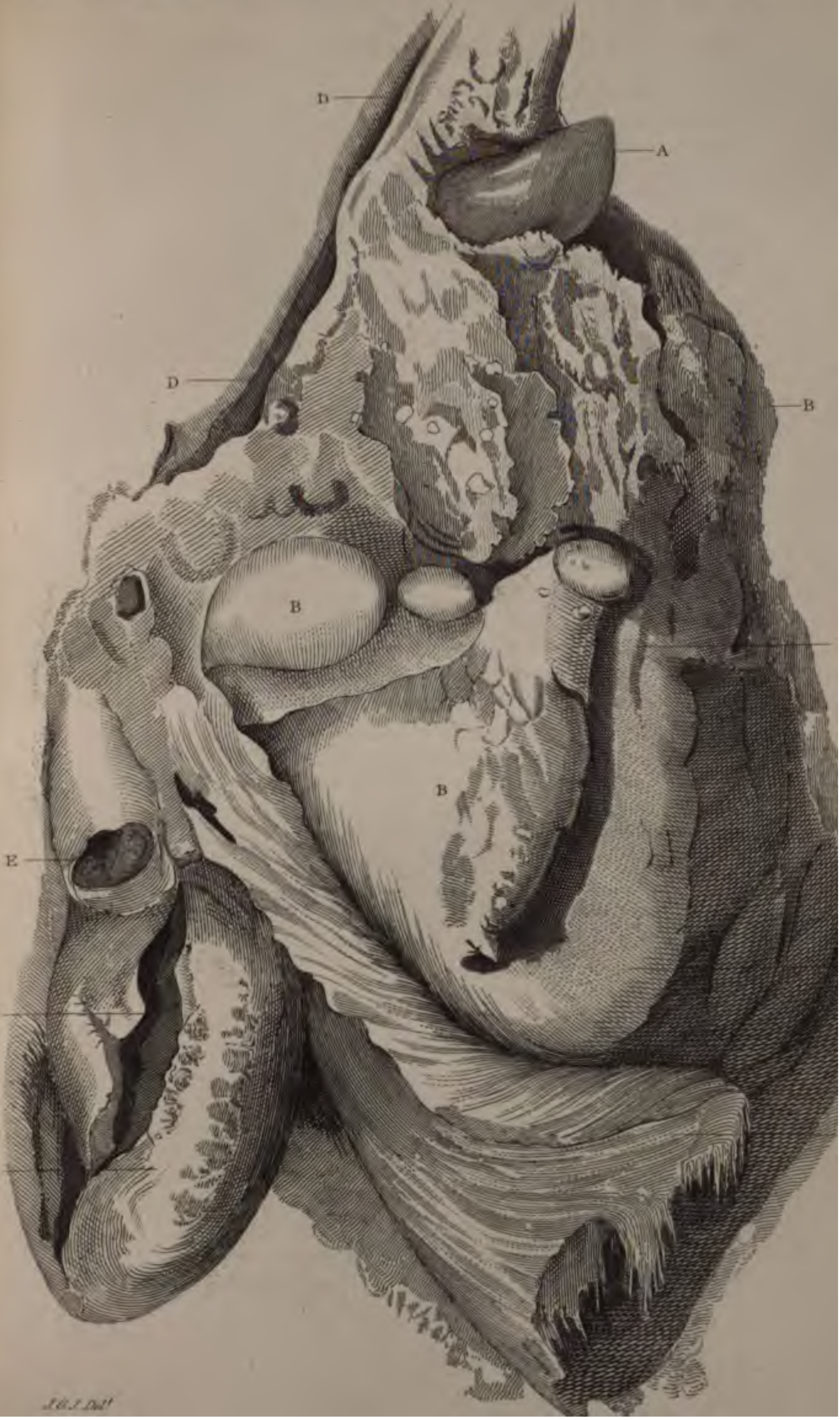

J. G. J. Delt

fused to submit to any operation, and as, from the situation of the swelling, I was doubtful as to the relief which would be obtained, I did not persist. A blister was ordered to be applied to the throat, and he was directed to take five grains of blue pill every six hours.

Eleven P. M. He has passed the day pretty well until about half an hour since, when he was seized with a return of the paroxysm. He jumped out of bed and ran to the window, crying out for air. He inspires now with the utmost difficulty, and grasps his throat with his hands. His lips are livid, and the circulation seems to have nearly ceased in the extremities; but he still resolutely refuses to submit to any operation.

He was ordered to have immediately a draught consisting of a scruple of laudanum, half a drachm of sulphuric ether, and half an ounce of camphor mixture; and the same to be repeated in the course of four hours.

15th. Ten A. M. He appears somewhat better this morning, and since taking the second draught has had some sleep; but the difficulty of inspiration is still very great. The blister has risen well, and there is a free discharge from the surface. Half a drachm of the mercurial ointment to be rubbed into the inside of the thighs night and morning. Pills to be continued.

Seven P. M. Breathes rather easier, but has had a slight return of the paroxysm in the course of the day. Complains of a constant short cough, with no expectoration.

16th. Spent a better night. The gums are tender. Mercurial inunction to be discontinued; pills to be taken twice daily.

17th. Passed a tolerable night. No return of paroxysm; but complains of great difficulty of breathing, with a sense of impending suffocation, which he, for the first time since his illness, states to arise from the pressure of the tumour. Pulse 120, small and feeble; tongue clean, moist; bowels freed twice during the night; blistered surface discharging freely. Iodine drops and mercurial pills to be continued.

18th. Has slept well during the night; breathes much easier, although the tumour is still increasing. Pulse 100, fuller than yesterday, but still weak; tongue clean, moist; three motions since last visit; gums tender; no discharge as yet from salivary glands.—Pills to be taken three times daily.

19th. A good night; breathing easier; pulse 98, as yesterday; tongue clean, moist; bowels regular; salivary glands a little affected.—Pills to be continued.

20th. Has had a return of the difficulty of breathing during the night, caused, he states, by the pressure of the tumour, which is increasing rapidly; but no feeling of fluctuation can be discerned after the most careful examination. Discharge from salivary glands has ceased, and he complains much of dryness of the mouth and fauces; pulse 108, small, feeble; tongue clean, dry, of a bright-red colour; bowels natural; mercurial inunction to be used twice daily as before.

21st. Difficulty of breathing much increased; was troubled with cough and pain in the side during the night. Towards morning spit up purulent matter streaked with blood. Other symptoms as yesterday.

> ℞ *Hydrargyri Iodidi, grana tria; Extracti Hyoscyami scrupulos duos. M. Divide in Pilulas duodecim; unam ter in die sumendam. Repetatur infrictio unguenti Antimonii Tartarizati.*

22d. The difficulty of breathing has increased so much since yesterday, that he has been unable to procure any rest, and the least motion causes a feeling of suffocation. The pulse cannot be felt at the rest, and he appears to be sinking. He suffered much from this time until 12 o'clock at night, when he died, retaining his senses until a few moments of his death.

Inspection fourteen hours after death.—An incision was made from the *os hyoides* to the sternum, and the skin and superficial fasciæ carefully dissected, so as to expose the tumour which was apparent during life. It was found to be deep-seated, and closely enveloped by the muscles, which were partly converted into adipose tissue. To expose it more fully, the sternum and cartilages of the ribs were removed. A large tumour was now seen filling up the anterior mediastinum, being firmly attached, anteriorly to the under surface of the sternum, from which it was with difficulty dissected, posteriorly to the pleura and pericardium; which was much thickened, and imbedded in the substance of the tumour. Superiorly the thyroid gland was pressed upwards by it, and inferiorly it had firm attachments to the diaphragm. It extended to either side about an inch beyond the union of the bones and cartilages of the ribs.

The tumour, with the larynx, heart, and pericardium, was now removed from the body. Two quarts of a transparent greenish fluid were contained in the left side of the chest, and one quart in the right. There were no adhesions between the lungs and pleura, nor were there any marks of inflammation present. The lungs and bronchial tubes were healthy throughout, except at the origin of the left bronchus, where were two small openings communicating with glandular bodies containing purulent and tubercular matter. The trachea was inflamed internally where it was pressed upon by the tumour, and at the origin of the bronchial tubes its diameter was considerably lessened by a tendinous band which surrounded it internally. The larynx was healthy, nor was there any appearance of its having been at any time diseased.

No fluid was found in the cavity of the pericardium; but the surface of the heart was covered with granulations, seemingly as if the process of ulcerative absorption had been going on for some time, in consequence of the pressure to which it was subjected. On cutting into the left ventricle, its parietes were found considerably reduced in thickness, and at the apex the muscular fibres were converted into fat; the right ventricle was somewhat thicker, but its cavity, as also the cavities of both auricles, were much smaller than natural. The valves were all healthy, but there was a blush of redness in the inside of the aorta, the calibre of which vessel was much reduced. The tumour measured 14 inches in length, and 4½ in breadth, and weighed with the heart 4½ pounds.

The viscera of the abdomen were all healthy.

The consideration of the symptoms, which were developed in the case of Attenborough, affords much that is interesting and instructive, as well from the novelty of the disease, as the difficulty which was experienced in forming a diagnosis. The growth of a tumour of any description within the cavity of the chest is of very rare occurrence, and there are but few such cases on record. An account, then, of one in which the tumour acquired so great a magnitude, and with so little disturbance to the animal economy until a short period before death, cannot fail to be an important addition to the science of pathology, which has latterly become so important a branch of medical knowledge.

I regret much that I have been unable to trace the previous history of this case, further than the account which the patient himself gave me, that, previous to his confinement in gaol, he had never been at all ill, and that, as far as he knew, none of his family were ever affected with any glandular disease. That the tumour could have been developed, and attained such a size from the period of his first complaint, about three months before his death, is not at all consonant with what we know of the growth of adipose tumours; for although they attain a very great magnitude, they increase in size but slowly. How, then, are we to account for its not giving rise earlier to uneasy sensations, when even in its earliest stages it must have pressed an organ so essential to life as those contained within the chest?

The symptoms from the first assumed a paroxysmal character, in consequence, I suppose, of the *par vagum* and sympathetic nerve being involved in the diseased mass. This, connected with his own statement, that the cause of the sense of suffocation which he found so distressing, was situated at the commencement of the larynx, and a blush of inflammation, which was visible on examining the pharynx, led me to suppose, on the morning of the 1st of May, that he was labouring under an attack of *œdema glottidis;* and with this opinion, Drs Bell and Scully, who saw the case with me, coincided. He at that time complained little of the swelling, which was situated over the thyroid gland; and our belief, that it was merely an enlargement of that body, gave us reason to suppose that, although the operation of tracheotomy would be very doubtful in its termination, it might be performed if necessity should compel us.

The state of the surface of the heart in this case was very remarkable. In the report of the *post mortem* examination, I have stated that it seemed as if the process of ulcerative absorption had been going on for some time; and I do not know any other term by which I can so well express the appearance which it presented; and what renders it more worthy of observation, the opposed surface of the pericardium was perfectly smooth; nor was there any fluid contained in the pericardial cavity.

The immediate cause of death was the effusion into the pleura, which must have taken place very rapidly, as, until a few hours before his death, he was able to sit up in bed, and lie equally well on either side.

I cannot give any information as to the stethoscopic indications for some time previous to his death, as, in consequence of the tenderness of the surface of the chest, from the repeated blistering and use of the tartar emetic ointment, he was unable to bear the application of the instrument.

The drawing (Plate II.) exhibits a side view of the tumour with the heart and larynx attached. A. Thyroid Gland; B. B. B. B. B. the Tumour; C. the Pericardium turned back; D. the Larynx; E. Right Auricle; F. Right Ventricle; H. Surface of the Heart.

ART. VI.—*On a Remarkable Diminution of the Medulla Oblongata, and adjacent portion of the Spinal Marrow, consequent upon Spontaneous Dislocation of the Processus Dentatus, and Ankylosis at the upper part of the Spine,—yet unattended with any symptom of Paralysis.* By P. D. HANDYSIDE, M. D. F. R. S. E. Lecturer on Anatomy and Physiology, Surgeon to the Royal Dispensary and the Stockbridge Dispensary. With an Engraving.

WILLIAM CRAIGIE, a working-cutler by trade, suffered at the age of 22 under a protracted attack of rheumatic fever, and was in consequence confined to bed for about seven weeks. During much of that time he was so debilitated as to be unable to turn his head or body, and lay almost constantly upon his left side. On recovery from this illness there was evident ankylosis between the occiput, atlas, and adjoining vertebræ, his head being bent immoveably forwards, and slightly to the right side. Nevertheless, he was able soon to return to his accustomed employment, and, indeed, he performed equally well the more severe and laborious operations at his forge, and the nicer and more delicate manipulations of a surgical instrument-maker, at which department of his trade he was unusually dexterous.

Four years previous to his death, he suffered under a severe bronchitie attack. After repeated invasions of this complaint, to which the severity of his occupation, with the alternations of temperature which he was frequently called upon to endure, in a great degree exposed him, he was at length carried off, after a day of continued bodily fatigue, by a very sudden and rapid attack of asphyxia. Thus, at the age of 32, terminated a case of what was found, upon dissection, to be advanced vesicular bronchitis.

Sectio.—Upon examining the upper part of the spine, the occipital bone, as was anticipated, is found firmly ankylosed to the atlas. These two bones are immoveably united in three places.* The ankylosis serves to connect the condyloid processes, and the posterior fourth of the *foramen magnum* of the occipital bone, with the corresponding surfaces of the atlas; and the circumstance of the head of this individual being retained immoveably in a direction downwards and forwards to the right side, is explained by the circumstance of the right inferior articular surface of the atlas being dislocated downwards and forwards over the corresponding articular surface of the axis, and retained in this false position by a strong bony union.

The displacement between the atlas and axis is such that the anterior portion of the ring of the former bone projects forwards, and to the right side, from the corresponding portion of the body of the latter, to the extent of nine lines. Again, the space for the lodgement of the lower part of the *medulla oblongata*, which intervenes between the posterior surface of the odontoid process of the axis, and the anterior surface of the posterior segment of the atlas is reduced, in the mesian plane, to two lines; while to the right side of the mesian line, where, indeed, the *medulla oblongata* lay, it does not exceed three lines and two-thirds in its antero-posterior diameter.

The synovial membrane of the atlanto-odontoid articulation is wanting, owing to the separation of these surfaces and their relative position being so much altered and deranged. However, the intervening space which has resulted from this distortion is occupied by a very strong fibro-cartilaginous band, of a cuboid shape, six lines in length by five lines in breadth, presenting in its entire length, and imbedded in its dense texture, four vertical laminæ of bone, at their extremities connected to, and serving to retain immoveably, what were formerly the two opposite articular surfaces. The transverse ligament of the atlas is altogether wanting, but the tubercles which served for the attachment of that ligament are connected by soft fibro-cellular tissue to the intervening fibro-cartilaginous band already noticed. The *ligamentum subflavum*, extending between the atlas and axis, is absent, excepting in the mesian line, where an elongated narrow band, remarkably dense, firm, and resisting in texture, though retaining none of its original elasticity, is stretched between these two bones posteriorly, in a situation where they are apart from each other to the distance of one inch and three-eighths.

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* See Plate III. Fig. 2, where the upper surface of the atlas and axis is faithfully represented, after the occipital bone had been forcibly detached from the atlas with the cutting-pliers.

The articulations intervening between the second, third, fourth, and fifth vertebræ of the neck were not very free in their movements, owing to the deposition of calcareous matter in the fibrocartilages covering their surfaces. An approximation to ankylosis is sufficiently manifested in this condition of the parts.

The membranes and vessels of the *medulla oblongata* and cervical portion of the spinal marrow were natural.

The *medulla oblongata* itself appeared natural, with the exception of a considerable alteration in the antero-posterior diameter of its lower portion, which, from the unusually contracted limits of the spinal canal at its upper part, was reduced to only three lines in thickness. It was also remarkably altered in its position, for it rested obliquely on the basilar portion of the occipital bone, while its lower portion was placed altogether to the right side of the odontoid process of the axis and of the arch of the atlas in a circumscribed space, the antero-posterior diameter of which, as already remarked, did not exceed three lines and two-thirds, and the transverse diameter of which measured only six lines.

The nerves arising from the *medulla oblongata* were of their natural size, consistence, and colour, and so likewise were the cervical nerves.

No paralysis, or even any remote indication of the existence of that state, or of any other affection of the nervous system, presented itself in any part of the body.

The foregoing case serves to illustrate well the very considerable amount of pressure and torsion which the *medulla oblongata* and upper part of the spinal marrow may be brought gradually to sustain, without the production of the slightest inconvenience; although these important and essential parts of the nervous system, being subjected suddenly to even a moderate amount of pressure, produces an interruption, which, if maintained, may terminate speedily in a total cessation of the vital functions of the body.

A case, allied somewhat to that under consideration, in the phenomena which it exhibited during the life of the patient, is detailed by Mr Phillips of London,* and is referred to in this Journal, (Vol. xlix. p. 265,) in which there existed a fracture and great displacement not only of the *atlas*, but of the *processus dentatus* likewise. Although the relations of this process to the displaced portions of the atlas and axis are not described in the account referred to, yet it is stated that there was no diminution in the width of that part of the spinal canal which lodged the *medulla oblongata*, but, on the contrary, this space was, in the region of the atlas, at the mesial line, actually more capacious than natural. "There was no lesion of the spinal chord found at death,"—a fact which serves in some degree to explain how during life no lesion of sensation or motion presented itself, and how there was no material disturbance of the functions of the economy.

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* Lond. Medico-Chirurg. Trans. Vol. xx. p. 78.

Caries of the atlas and axis, accompanied with spontaneous dislocation of the *processus dentatus*, among other pathognomonic signs, is characterized by the entire absence of paralysis, which, according to Professor Syme, * is a very constant mark of the existence of this very interesting and important disease. The case which I have here detailed is worthy of notice, as presenting the peculiarity just noticed, while, at the same time, the history, symptoms, and necroscopic appearances of caries fail to be traced in it.

In the museum at Guy's Hospital, London, are some preparations illustrative of ankylosis and exostosis of the cervical vertebræ. But in all of these cases paralysis had resulted. Dr Hodgkin, the author of the catalogue of that valuable collection, describes the preparations marked Nos. 1011 and 1012, as exhibiting the *processus dentatus* so much enlarged as to have occasioned paralysis. In No. 1012, a preparation taken from the body of a patient who had been under the care of Dr Bright, partial paralysis, both of the upper and lower extremities, had been produced by an exostosis arising from the *processus dentatus.*

ART. VII.—*Case in which the motions of the Leg and Foot, impaired by Rigidity, were restored by Division of the Tendo Achillis.* By THOMAS ANNANDALE, Esq. Surgeon, Newcastle.

IN conjunction with Mr Liston, I was consulted, in December 1834, by a young gentleman who had met with a severe injury of the knee-joint eighteen months previously. The precise nature of the injury we were unable to ascertain. Various remedies had been tried without benefit. The limb is at present in the following condition. Considerable wasting of the muscles has taken place, on both aspects of leg, especially the anterior; loss of sensation midway down the anterior portion of leg; complete inability to elevate the toes. In walking, the limb cannot be brought within two inches and a-half of the ground, showing a complete paralysis of the whole anterior part of limb; the fatigue in walking a short distance is great.

I proposed dividing the *Tendo Achillis* in the first instance, and endeavoured to stimulate the paralysed muscles by the usual remedies afterwards. It was then decided that this operation must be the last resource; consequently other remedies, such as blis-

* *Vol.* xlv. of this Journal, pp. 8 and 9.

tering, the application of strychnia, &c. were persevered in without benefit.

My patient after this consulted a celebrated surgeon in London, who ridiculed the idea of an operation. This opinion induced him to submit to great pain and inconvenience, until he again consulted me in August 1838, when I found that his deformity had much increased. The heel was at a greater distance from the ground; the astragalus was pushed forward, and threatened to become entirely dislocated; a few minutes walk produced excessive fatigue.

As at this time the British Association met in Newcastle, I availed myself of the opinion of my friends, Dr Handyside of Edinburgh, and Dr Scholfield of Doncaster, who, though not so sanguine as to the result of an operation, yet coincided in opinion with me, that, sooner or later, the case must end in amputation. The patient being firmly convinced that he had no prospect of being benefited from any means used, until, as he said, he could get his heel to the ground, now consented to the operation formerly proposed, of dividing the *Tendo Achillis.* This I accordingly performed on the 15th October 1838, by the introduction of a very fine bistoury under the skin, and, drawing it across the surface of the tendon, so as to divide it completely, I left a superficial wound no larger than a leech-bite.

The heel fell immediately, and was retained in that position for a week, at the end of which time the patient was allowed to put it to the ground. An instrument was then applied, which, though of very simple construction, would act as a very powerful lever in the event of union of the tendon taking place, and prevent any tendency to contraction of the gastrocnemii muscles again. No swelling or inflammation followed the operation, the divided ends of the tendon seemed to separate fully two inches and a-half. At the end of three weeks no matter between the divided ends of the tendon could be discovered.

Jan. 1, 1839. A series of blisters were applied to the anterior part of leg, and strychnia used without the least benefit. The limb continued to improve, gradually gaining more strength, until the instrument could be dispensed with; and now, my patient, without aid from instruments, can walk several miles, and enjoy field exercises without experiencing fatigue. The numbness and paralysis, however, of the anterior muscles continue; there is no disposition in the gastrocnemii to contract, yet I trust the paralysed muscles may yet recover their contractile power In walking it is scarcely possible to detect any defect in the limb.

In a practical point of view this case is possessed of considerable interest. In the *first* place, from the absence of any irritation or inflammation after the operation; *secondly*, from the very rapid manner in which a deposit took place, and which seemed to agglutinate the ends of the divided tendon. The exact nature of this deposit can only be ascertained by a future examination.

From the result in this and another case of ruptured *Tendo Achillis* which I have had under my treatment, I feel inclined to place the limb in future with the heel to the ground at once, as a more eligible method than the present irksome position adopted, trusting that nature may fill up the space between the ruptured ends of the tendon. In a cure effected in this manner, I think there will be less reason to apprehend a recurrence of the accident.

ART. VIII.—*An Account of the Rötheln of German Authors, together with a few Observations on the Disease as it has been seen to prevail in Leith and its neighbourhood.* By ROBERT PATERSON, M. D. &c. Physician to the Leith Dispensary.

AMONGST the diseases of children, there are none so familiar to every practitioner as measles and scarlet fever. They at once present in their respective premonitory fevers and exanthematous eruptions, a series of characters, which render their distinction a matter of great ease. Epidemic visitations of both are common in this country, and although they are occasionally seen prevailing together, most frequently we find the one immediately following the other, or predominating altogether at a different period.

When the two diseases occur simultaneously, or follow hard upon each other, medical men are in the habit of seeing cases which they look upon as anomalies of one or other of the two diseases, but which possess characters which belong to both. Such cases are generally set down by practitioners as hybrids, as anomalies of measles or scarlet fever, according as the case may exhibit the greatest number of symptoms, belonging to the one, or other, of those diseases.

Under such vague appellations I believe that practitioners have been in the habit of including a distinct disease intermediate between the measles and scarlet fever, presenting certain characters belonging to both, as well as certain characters peculiarly its own. I shall have occasion to notice these characters in detail when I describe the duration and appearance of the exanthematous eruption.

This disease is characterized by an eruption of crimson stigmata, rapidly running together into patches of an irregular shape, with obtuse angles, varying much in size (from that of a pea to a crown-piece) according to the severity of the case, being smaller in mild, and larger in severer cases; continuing for six or ten days, and terminating in furfuraceous scales; preceded by and accompanied with fever; watery discharges from eyes and nose; sneezing, and sore throat.

HISTORY.—The measles, as is well known, are of very ancient date. They are believed to have first appeared at the same time as small-pox, during the memorable siege of Mecca,

A. D. 569. They were considered and described by all ancient authors before the time of Avicenna, as a more gentle variety of small-pox. This author, however, who flourished about the beginning of the eleventh century, described them separately, and says that he considers measles as a kind of bilious small-pox. I find, however, from the works of Synesius,* that Abu Dschafar, an Arabian author, who lived in the twelfth century, most accurately described those two diseases—measles and small-pox; and pointed out their distinguishing marks. It appears, however, that, under the various kinds of measles, or morbilli (as they were then called), authors had for a long time confounded two separate diseases, the measles and scarlet fever. For although it may appear strange, it is not the less true, that these two diseases had been witnessed in all their varieties and in all their malignity; had been seen to attack persons, the one disease immediately after the other; and yet so late as the middle of the eighteenth century, writers of the highest repute supported the identity of measles and scarlet fever.

It appears that Prosper Martianus, an Italian physician, who practised in Rome about the middle of the seventeenth century, is among the first authors who has described scarlatina as a disease different from the morbilli or measles. Prosper Martianus first described it under the term scarlatina; a term which, according to Dr Mason Good, is of Italian origin, and "was long in use as a vernacular name on the shores of the Levant, before it was imported into our own country." Scarlatina made its appearance in London, as an epidemic, in 1689, and was recognized and described by Sydenham as the *febris scarlatina.* Although this division and distinction from the morbilli was so completely made by these authors and many others, we, nevertheless, find Dr Morton and Sir William Watson, so late as the year 1769, considering them as one and the same disease (the *morbilli confluentes).* Sauvages in 1768, and Cullen in 1772, had fixed accurately the nosological place, and given a correct definition of scarlet fever; and their distinctions and descriptions were generally adopted both in this country and throughout Europe. Dr Withering, however, in his essay first published in 1790, and afterwards in 1793, gave a full and correct history of the disorder, and added much to the accuracy of its diagnosis, especially in relation to the diphtheral affection, then called ulcerated throat; and Willan in 1808, gave a most comprehensive account of the disease, not merely from his own observation, but from the labours of the most eminent of his predecessors.

All authors before the time of Sauvages used the term morbilli to designate the measles; he, however, adopted a new name for that disease, and called it Rubeola (derived from the Spanish). The result of this innovation of Sauvages was to create a great deal of confusion among medical men; some applying the word rubeola to the scarlet fever, others to the measles proper. This was more especially the case in France, where rougeole (the translation of rubeola) was at one time applied to the scarlet fever; and even towards the termination of the eighteenth century, when the distinction between these diseases was well made out, Chevenan[*] informs us that the Marseillois used the word rougeole to signify scarlatina, and distinguished measles by the name of Senapion.

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* Synesius de Febribus. Edit. Bernardi. Amstel. 1749. Translated from the original Arabian into the Greek and Latin languages.

Medical men before the time of Drs Willan and Bateman were constantly confounding measles and scarlet fever under the different appellations *Morbilli*, *Morbilli Maligni*, *Morbilli Spurii*, &c. and I believe that it was chiefly in consequence of this circumstance that these authors, with a view to give more precision to the terminology of these diseases, altogether discarded the word Morbilli, and adopted the terms Rubeola and Scarlatina, to designate respectively measles and scarlet fever.

Such is a short account of the manner in which the morbilli or measles of the ancients has undergone a division into two distinct diseases, and also of the manner in which that word has fallen into disuse. The disease, which it is my intention at present to describe, is an intermediate between the two exanthematous affections, above-mentioned. Hildenbrand follows the generality of continental authors in using the word Morbilli to signify the measles, Scarlatina the scarlet fever, and he terms the present disease Rubeola. German authors in general call it Rötheln or feüermasern. I fear that the adoption of the word rubeola for this disease would produce confusion in medical nomenclature. I shall therefore use the German word Rötheln to designate the mixed disease under consideration, in preference to that of rubeola, or the use of a new term.

It was first noticed as a distinct disease by Lellius, a German author who flourished towards the termination of the last century, and it has been described by Ziegler,[†] Reil,[‡] Fulitz,[§] Jahn,[‖] Hufeland,[¶] Schæffer,[**] Formey,[††] Fleisch,[‡‡] and Heim,[§§] Strohmayer,[‖‖] Gallisch,[¶¶] Hildenbrand,[***] &c. &c.

[*] Chevenan's Observat. Med. p. 454.

[†] G. F. A. Ziegler, Beobachtungen aus der Arzneywissenschaft, &c. Leipsig, 1788.

[‡] Memorabilia Clinica, Vol. ii.

[§] D. Fielitz, Junior, Beobachtung. eines Rothel. Epidemic, in Hufeland's Journal, iv. B. 2 St. S. 199.

[‖] Jahn, Neues System der Kinderkrankheiten, S. 446.

[¶] Hufeland's Journal for June 1811, p. 15.

[**] Schaeffer, Beschreibung und Heilart der Gewöhnlichen Kinderkrankheiten, Regensb. 1803.

[††] Topographie von Berlin, 1796.

[‡‡] Fleisch, Handbuch über der Krankheiten der Kinder, Leips. 1803.

[§§] Heim in Hufeland's Journal, 1812.

[‖‖] Strohmayer, Diss. de Rubeolarum et Morbillorum differentia, Goetl. 1806.

[¶¶] Gallisch, Tractatus de Rubeola, Vienna, 1823.

[***] Hildenbrand's Institutiones Practico Medicæ, Vol. iv. p. 412.

I am not aware of any description of this disease in our language, and as I am convinced, from many cases of it which lately prevailed in this neighbourhood, that it possesses characters peculiarly its own, and which at once distinguish it from the allied affections, measles and scarlet fever, I have been induced to offer the following observations, drawn up partly from the accounts which have already been published of the affection in other languages, and also from a close observation of numerous examples of the disease, as it prevailed in Leith and its vicinity.

Description.—*First Stage.*—The first or febrile stage of this disease varies, like all the other exanthemata, not only in the severity of the symptoms, but also in the disease to which it bears the greatest resemblance. It usually commences with rigors, not severe, but continuous. When it occurs in children, the little patients are observed to draw near to the fire, to become sleepy and listless, and not to take their usual quantity of food. Soon after more or less cough makes its appearance. It is the same clanging cough which is observed in the febrile stage of true measles, and is very shortly accompanied with a degree of itchiness, redness, and weakness of the eyes; lacrymation, frequent sneezing, and watery discharge from the nose. In persons more advanced in life, who can give a distinct account of their feelings, severe frontal headach is also complained of, together with rheumatic pains, more especially in the muscles of the back and chest, nausea and sometimes vomiting, together with constant drowsiness. The skin is hot and dry, the pulse is above the natural healthy standard.

A greater or less number of the above symptoms is always noticed, but in addition and the most universal one is sore throat. This, in some cases, is extremely slight, amounting only to a roughness in speech, and trifling difficulty in swallowing; but in others, it goes on to severe inflammation of the tonsils, *velum pendulum palati, uvula*, and surrounding parts. This last, however, is more commonly remarked to be more severe during the eruptive stage, and will be more especially noticed then. I may here notice, however, that this sore throat is looked upon as one of the most characteristic features of the disease, occurring in even the slightest and most gentle cases. "Constantissima vero," says Hildenbrand,* "esse solet angina faucium inflammatoria in tonsillis et velo pendulo palatino sedem figens, quae nonnisi in levissimo morbi gradu deficere videtur." Dr Heim of Berlin has described a particular odour that patients labouring under this disease emit. It is similar to, but stronger than, that which scarlatina patients have, and has been likened to the smell of a place where fish is kept, or to the cages where wild animals are reared.

* Institutiones Practico-Medica, Vol. iv. p. 414.

Second Stage.—After the above-mentioned symptoms have continued for three or four days, the second stage is ushered in by the appearance of an exanthematous eruption. It at once breaks out over the whole body, being bright and thickly set over the trunk, but more sparingly on the face and extremities. It apparently assumes different aspects and degrees of confluence, according to the severity of the case. It first appears like measles in the form of red coloured stigmata, which rapidly run together and soon assume an irregular shape, with obtuse blunt angles, the whole patch being of the same depth of tint as in other and generally more severe instances; the irregular patches are of an intense red colour towards the centre, being gradually shaded off at the circumference to the colour of the surrounding skin, and presenting a very similar appearance to that produced by a writing quill dipped in red ink, and having its point placed upon moist white paper. The size of these patches in ordinary cases is from that of a barley-corn to a sixpenny piece; but in the severe form of the disease, they run still further together, and are sometimes seen of the size of a crown-piece, sometimes even larger. In such malignant cases I have seen the whole body covered over with patches, varying from the size of a sixpence to a crown-piece, thickly set together, and of an intensely dark colour towards their centres. (See Case 1.) The eruptive patches are felt distinctly elevated on passing the finger over the cutaneous surface, in some instances being more so than in others, but always being greatest towards the centre of the patch. During the continuance of this eruption, the general symptoms formerly described are usually aggravated, and not unfrequently new ones are superadded. Thus the sore throat becomes much worse; the hoarseness is so great as frequently to amount to entire loss of voice; and generally more or less external tumefaction of the throat takes place. In severe cases this is great, and is accompanied with much redness and swelling of the throat internally; a total inability to swallow even the slightest portion of fluid, which generally regurgitates by the nose; there is complete aphonia; a large secretion of vitiated mucus; and constant cough, which is rendered doubly severe by the state of the throat. The pulse is very frequent, the skin hot and dry, the little sufferer now becomes extremely restless, tossing the head constantly from side to side, starts frequently, and is seized with convulsions. It is at this stage in the worst forms of the disease that death generally occurs, and it takes place either by suffocation from the large quantity of vitiated mucus, or by convulsions and subsequent coma.

Vomiting is an occasional symptom during this stage, and, like convulsions, is sometimes seen in mild cases of the disease in children.

The severity of the premonitory febrile symptoms, and the second or eruptive stage, are generally proportionate.

The eruption in mild cases in general continues distinct for from four to five days, during which time the other symptoms are going on favourably, becoming gradually milder as the period of the decline of the eruption draws near. In severe cases, however, the rash keeps its bright colour and distinct form a much longer time. I have seen cases of this description where it continued present six, eight, and ten days. As might be expected, the accompanying symptoms in such cases are equally severe; and, in addition to those above-mentioned, if the patient survive till towards the close of this period, external glandular swellings are liable to occur.

The termination of this second stage is in some instances marked by a distinct crisis, by sweat, by a copious deposit from the urine, by diarrhœa or epistaxis. Most commonly, however, no such circumstances are observed, the eruption gradually fades, and an amelioration in all the symptoms takes place.

Third Stage.—As the eruption disappears, the third stage, or that of desquamation, gradually ensues. The appearance of scales towards the centre of the patches, formerly occupied by this eruption, shows that this stage has commenced.

These scales, which are first seen towards the centre of the patch, gradually extend to the circumference, and soon spread over the whole body. The scales are small, and not unlike those of measles which have been very justly likened to the appearance produced by sprinkling the surface with fine bran. On the hands and feet the scales are a little larger, but never reach the size of those in scarlatina.

Opinions of Authors regarding Rötheln.—Some authors, as Hufeland, Schäffer, Formey, and Heim, contend that the disease which I have just been occupied in describing is only a variety of scarlatina; others, as Kapp, Wichmann, and Reil, that it is a variety of measles;—while others, as Uberlacher, Jahn, Fleish, and Hildenbrand, consider it to be a disease possessing characters common to both measles and scarlet fever, as well as characters peculiarly its own. For further information on this point, I refer to the diagnosis, where the differences between the three diseases are set down in a tabular form. It is true that cases of this disease are seen during the simultaneous prevalence of measles and scarlet fever, and more especially when an epidemic of the one, (say of measles,) is immediately followed by an epidemic of the other. Under such circumstances, a few straggling cases of this affection occur. But besides this we have accounts of epidemics of this disease alone. Thus Selle* has described a malignant and most formidable epidemic which occurred to him, and Formey[*] has added additional notes and observations on it in his Topography of Berlin. In the late opportunity which I had of witnessing an epidemic of this nature, some of the cases were of a most malignant type, and not a few of them fatal. It made its appearance towards the conclusion of a mild epidemic of scarlatina, and spread very rapidly. It was chiefly confined to one locality which is isolated, and on the outskirts of the town. During the course of six weeks it raged in this place ; frequently three or four children in one family were affected with it, generally, however, in a very mild form. Through the kindness of some of my professional friends, I had also opportunities of witnessing many other cases in various parts of the town. I am also informed by others of my professional brethren that they witnessed similar cases about the same period.

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* Neue Beiträge zur Natur und Arzneywissenschaft, 1 Th.

Introduction of Rötheln.—I had an opportunity of tracing the introduction and propagation of Rötheln in the locality referred to. The first case made its appearance in the person of a healthy child about 10 months old, who had neither had measles nor scarlet fever. The latter disease, however, in a well-marked though not severe form, was in the house at the time. No cause could be assigned for this child taking the disease under consideration, and not the scarlet fever. In the course of a very short time many other cases of Rötheln presented themselves. They were all in general mild. Although very few cases of scarlatina had occurred in the district, there were still a few in the neighbourhood, and I had opportunities of occasionally seeing this disease in one or two members of a family, while others had the scarlet fever in a proper and distinct form. I was informed by one mother, that her child, who was then labouring under this disease, (rötheln,) had previously had measles. I am not inclined to place implicit confidence on this assertion, as many other eruptions might have been mistaken for it. But I had an opportunity of witnessing a case of scarlet fever run through its regular course in a mild form, in a child whom I had attended four months previously for this disease.

It was probably as often seen, if not more so, in houses along with measles, as with scarlatina, and this was more especially noticed towards the termination of its prevalence.

Lesions in Fatal Cases.—The accounts which authors have given of the morbid appearances observed in Rötheln are extremely few in number. These appearances vary materially according to the period of the disease at which death occurs. It most frequently happens during the eruptive stage, and from the affection of the throat and lungs. In such cases, the lungs are generally found much congested. The mucous membrane of the bronchia is injected, and copious mucous secretion is perceived. The throat presents very similar appearances to those which are seen in scarlatina, great tumefaction and dark coloration of the membrane lining the throat, dark aphthous-looking spots, and large quantities of vitiated mucus, viscid and glutinous in its nature. Such were the appearances presented in the only case which I had an opportunity of inspecting where death took place during the second or eruptive stage.

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[*] Topographie von Berlin, S. 169.

In those dying later in the disease from exhaustion, or the irritation arising from suppurating glands, no appearances of any consequence have been remarked further than the result of inflammation and its consequences in the parts affected. A very remarkable instance of this kind is recorded. (See Case 4, p. 393.)

Diagnosis.—The diagnosis of this disease is by no means a difficult one. The accompanying febrile symptoms at once distinguish it from roseola, as also do the peculiar characters of the eruption; and the only other affections with which it can be confounded are the measles and scarlet fever.

It appears most probable that this is really not such a rare disease as one would at first suppose. Most medical men in practice must have seen it, but at once put it down, on the one hand, as a variety of scarlatina, or, on the other, as a variety of measles. The first cases which I had an opportunity of witnessing, and which occurred before I was aware of the description of this as a separate disease by continental authors, appeared to be some peculiar anomalous kind of scarlatina. Since then, however, I have had abundant opportunities of examining its nature more precisely, and conceive with the authors formerly mentioned, that it has every right to be considered as a distinct affection. Dr Heim of Berlin has given a full account in a tabular form, of the distinguishing marks of the three diseases, Morbilli, or measles; Rubeola, Rötheln, or the mixed disease; and Scarlatina, or scarlet fever.

We annex a table, drawn out in a manner a little different from that of Dr Heim, with the view of pointing out the diagnostic marks more clearly than can be otherwise done.

TABLE showing the most prominent distinguishing characters of SCARLET FEVER, RÖTHELN, and MEASLES.

SCARLET FEVER.	RÖTHELN.	MEASLES.
Symptoms of First Stage, or Premonitory Fever.		
Rigors; nausea; sometimes vomiting, thirst, and heat of skin; together with sore throat, hoarseness, and delirium in the anginose variety.	Shiverings; nausea; rarely vomiting; itching; redness and pain of the eyes, with increased flow of tears; sneezing, and watery discharge from nose; cough, sore throat and hoarseness.	Rigors; nausea, and sometimes vomiting; frequent starting during sleep; itching; redness; pain of eyes; watery discharge from eyes and nose; sneezing; harsh cough.

<table>
<tr><th>SCARLET FEVER.</th><th>RÖTHELN.</th><th>MEASLES.</th></tr>
<tr><td colspan="3">Duration of Premonitory Fever.</td></tr>
<tr><td>Premonitory fever is of short duration. The eruption most generally making its appearance on the second day.</td><td>The eruption generally breaks out on third or fourth day.</td><td>Eruption makes its appearance towards the close of the third, or beginning of fourth day.</td></tr>
<tr><td colspan="3">Appearance of Exanthematous Eruption.</td></tr>
<tr><td>It first appears in innumerable red dots or points, being at first of a pale-red colour, soon acquiring a deeper tint, and at last giving the affected portion of skin a uniform red appearance.</td><td>The rash appears in minute dots, but rapidly assumes the appearance of irregular-shaped patches with obtuse angles, varying in size from that of a threepenny to much larger than a crown-piece. The red rash is gradually shaded off with the surrounding skin.</td><td>The rash appears in minute red points, like flea-bites; several of them soon coalesce, and form rounded masses, irregular-shaped crescents, or semicircular patches.</td></tr>
<tr><td colspan="3">Roughness or Elevation of the Affected Skin.</td></tr>
<tr><td>There is a perceptible roughness in the skin affected with scarlatina. It is in general most evident on the breast and extremities, and seems to consist of the enlarged papillæ of the skin.</td><td>In this disease, more especially in the severer forms of it, the patches of eruption are distinctly and considerably elevated, and more especially towards the centre of the patch.</td><td>The elevation of the patches of eruption in measles is slight, though in general distinct in the worst cases, they are certainly not at all elevated.</td></tr>
<tr><td colspan="3">Part of Body First Affected.</td></tr>
<tr><td>The efflorescence is first perceptible on the face, neck, and chest, gradually passing downwards, and becoming diffused over the whole body.</td><td>The efflorescence first appears on the trunk of the body, the whole of which it at once occupies. It is always more sparingly seen on the extremities, but seems to break out there at the same time as it does on the trunk.</td><td>The efflorescence first appears on the forehead and among the roots of the hair, and spreads slowly and successively over the neck, chest, trunk, and extremities.</td></tr>
<tr><td colspan="3">Duration of the Eruption.</td></tr>
<tr><td>The eruption remains present three days; begins to disappear on the fourth day; and is almost entirely gone by the termination of the fifth day.</td><td>In the rötheln, the duration of the eruption seems to depend upon the severity of the disease: in mild cases remaining out four or five days, and in bad cases, 6 or 10 days.</td><td>In this disease, it remains out three days.</td></tr>
<tr><td colspan="3">Symptoms accompanying the Eruption.</td></tr>
<tr><td colspan="3">The symptoms which accompany the eruption in all the three are quite the same as those of the premonitory fever. It is proper here, however, to remark, that it is only in the anginose and malignant varieties of scarlatina that we have sore throat, there being little or none in the simple scarlatina, while in the mildest kind of rötheln this is always a prominent and troublesome symptom.</td></tr>
<tr><td colspan="3">Desquamation.</td></tr>
<tr><td>The cuticle in this disease is thrown off in patches of considerable size, the largest being from the hands and feet.</td><td>The desquamation of rötheln consists of minute portions of cuticle like scales of fine bran.</td><td>The desquamation of measles consists of minute portions of cuticle, like scales of fine bran.</td></tr>
<tr><td></td><td colspan="2">The desquamation always begins towards the centre of the eruptive patch, and gradually extends to the circumference.</td></tr>
<tr><td colspan="3">Sequelæ.</td></tr>
<tr><td>Anasarca is the most common sequela of scarlet fever. It is extremely common, and most frequently occurs after the mildest cases; swelling and suppuration of the cervical glands, is also common.</td><td>I have noticed one case of dropsy after a mild, though well-marked attack of this disease; swelling and suppuration of the cervical glands also frequently takes place.</td><td>Affections of the lungs and pleura; tedious distressing cough; chronic bronchitis; pneumonia; tubercles; gangrenous inflammation of cheeks, gums, lips, genital organs, &c.; dropsy occasionally occurs, but very rarely; diarrhœa is very common after some epidemics.</td></tr>
</table>

It will be apparent from the foregoing table, that the disease under consideration is one which distinctly partakes of the characters of both measles and scarlet fever. It has, therefore, been generally considered as a hybrid affection. This opinion, I think, has been formed without sufficient examination of its distinguishing characters. Of these, the most obvious and best marked we find to be the following.

The period of the eruptive fever, at which the efflorescence makes its appearance.

The peculiar characters of that efflorescence, as well as the fact, that, unlike either the measles or scarlet fever, the more severe the case, the greater is the size and brightness of the exanthematous patches, while in bad cases of these diseases, the rash seldom appears distinctly and properly, and has never the bright hue.

The duration of the eruption of rötheln, too, is much greater than that of either measles or scarlet fever.

PROGNOSIS.—Our prognosis in this disease must always be guarded. We must keep in mind that it is often an extremely and rapidly fatal disorder. Like measles and scarlet fever the greater or less acuteness of the premonitory fever generally affords us a means of judging as to the probable severity of the eruptive stage. It is in general a mild disease. In some cases, however, it assumes a high degree of malignity, and there is no foretelling the cases in which this is to be apprehended, as they occasionally occur in the midst of a mild epidemic. In such instances the eruption assumes a purplish hue; the face becomes swollen and livid; great discharge takes place from the nostrils; delirium, convulsions, and not unfrequently coma close the scene. In other cases, however, the patient dies suddenly, from the immense accumulation of mucus in the back of the throat producing suffocation. It is always a bad symptom, to have a copious secretion of mucus in the back of the throat, and also (which generally occurs in the same cases) regurgitation of fluids by the nose, while the patient is attempting to swallow. In by far the majority of cases, however, it is a mild and tractable disease, equally so with measles or *scarlatina simplex*.

TREATMENT.—The treatment of Rötheln is to be conducted in a manner very similar to that pursued in scarlatina. In by far the majority of cases all that is necessary is to confine the patient to bed in a cool well-aired apartment. There must be sufficient bed-clothes to insure comfort. Too much cold must be particularly guarded against, as it is liable to give rise to inflammatory affections of the chest. The diet ought to be extremely light, and cooling aperients are frequently to be administered. The patient is to be allowed the use of sub-acid fruits and cooling drinks. Steaming the throat with hot water, by holding the head over a basin of it, is always much relished by the patient. In all cases, whether simple or severe, I am in the habit of using as a common medicine a mixture composed of two ounces of *Aqua Acetatis Ammoniæ*, half an ounce of antimonial wine, and four ounces of water, sweetened and made palatable by the addition of two or three drachms of syrup of orange-peel.

It seems to have a good effect by determining to the skin or kidneys, according as the patient is kept warm or cool. In the severer cases, however, which are occasionally to be met with, more powerful remedies must be had recourse to. I have not as yet tried general blood-letting in any case which has fallen under my notice. I was always able to produce a sufficient effect by means of leeches in the class of patients (infants and children) in which this disease was seen. In such cases it is better to apply a number of leeches at once over some prominent bone, as at the top of the sternum or lower jaw, so that we may be enabled to stop the bleeding at pleasure, by pressure, when a sufficient quantity of blood has been abstracted. The affections of the throat and lungs frequently call for such method of treatment, in consequence of the youth of the patients. It is unnecessary to say anything of the detection or treatment of chest complications, as that will be sufficiently obvious to every one accustomed to the treatment of other diseases. I may remark, however, that the chest, as in measles, ought to be carefully examined from day to day, as inflammatory action is apt to be suddenly lighted up, and prove rapidly fatal.

The use of colchicum having been strongly recommended by Dr Lewins * of Leith in continued fever, and by Mr Tait† of Edinburgh in the affection so closely allied to the present one, scarlet fever, was had recourse to in a few cases of this disease, and apparently with decided benefit. The cases, however, in which it was used were few in number, and towards the conclusion of the epidemic, when the generality of cases were otherwise mild, which prevents anything like an opinion being given regarding its efficacy. The dose used was, to children under five years of age, two or three drops of the *Vinum Colchici* every two or three hours, till vomiting and purging were produced, when it was either stopped entirely, or used in smaller or less frequent doses afterwards.

The effects which were noticed from its use were very similar to those which Mr Tait describes having witnessed in scarlatina. "The pulse was diminished in frequency and force, the palpitation of the heart, which in young subjects was often perceptible to the eye, subsided," and the skin became moist. Great relief was always observed after the medicine produced vomiting, or the discharge of dark matters from the bowels.

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* Edinburgh Medical and Surgical Journal.

† Lancet, Vol. i. for 1837 and 1838, p. 198.

Cases.—The following cases, which have been selected from a considerable number of which I possess the notes, will serve sufficiently to illustrate the ordinary course of this disease.

Case 1.—This occurred in a house in which a boy had just recovered from an attack of scarlatina. The eruption had disappeared four days, but he was still labouring under the effects of suppuration of the cervical glands. The subject of the present case, 12 months old, a stout healthy child, was seized, on the 12th of October 1839, with feverishness. He refused his food, became listless and drowsy, started constantly during his sleep, and would not leave the nurse's arms. Next day he complained of sore throat; had frequent sneezings and serous discharge from the nose; and the eyes were slightly red and watery. All these symptoms became much aggravated during the two subsequent days. The eruption appeared on the evening of the 15th of October, being the fourth day of the premonitory fever. By the account of the friends, it was first noticed on the abdomen and sides, but next morning it occupied the trunk and extremities; very little of it appeared on the face. The patches had a most irregular form with rounded obtuse angles, of a dark-red colour, and distinctly elevated above the surrounding skin. The general symptoms became more aggravated after the appearance of the eruption; the throat became much tumefied externally. On inspection, the uvula and more especially the tonsils were observed to have become swollen and covered with grayish coloured lymph; and great secretion of mucus took place from the inflamed surface. The slightest effort to swallow a little cold or tepid water produced great suffering, and once or twice brought on an attack of convulsions. The same state of matters continued for six days after the first appearance of the eruption, when death took place suddenly, apparently from suffocation, in consequence of the large accumulation of vitiated mucus. The eruption continued bright to the last. We were not allowed to inspect the body. Dr Craigie of this town visited the above case with me on the third day of the eruption.

Case 2. —— ——, aged 2, Yardheads, was attended by Mr Bowman, by whom I am favoured with notes of the case. Three children in the same family had been affected with *scarlatina anginosa* in a slight form. The present case, however, after presenting the usual premonitory symptoms of that disease, and with the addition of frequent sneezing, on the third or fourth day of the premonitory fever, became affected with an exanthematous eruption, which Mr Bowman considered of a measly nature. It ran a short and mild course.

Case 3. Four children of the name of Johnston, residing in Couper Street, were, towards the end of October, successively seized with the usual symptoms of Rötheln, viz. shiverings, nausea, cough, sneezing, with watery discharge from the eyes and nose. The eruption appeared on the third or fourth day in all, and continued out about five or six days. The sore throat in one of the boys was severe, and was covered with whitish-looking lymph. In one or two the bronchitic symptoms assumed a severe form. They all, however, did well. The desquamation was extremely slight, being precisely similar to the appearance of very fine bran sprinkled over the cutaneous surface.

Case 4. This child, aged 9 months, was seized on the 3d of December with the usual symptoms of Rötheln. Measles had been prevailing in the same stair, and in the next house to the one in which this child lived. The throat became severely affected before the appearance of the eruption, and was much aggravated after it came out. Shortly after the efflorescence took place, the following symptoms were observed. An anxious countenance; eyes red and watery; a red blush around the openings of the nostrils, which were constantly discharging a large quantity of serous fluid; great difficulty in swallowing, and much tumefaction over the throat, which on inspection internally was seen to be highly inflamed, of a dark red colour, and the tonsils were covered with numerous gray specks of lymph. When the child tried to swallow, the fluid regurgitated by the nose. There was slight cough. The breathing was easy, but entirely through the nostrils. The eruption had the usual appearance of rötheln; the patches being generally about the size of threepenny or shilling pieces, and very irregular in their form. On the trunk they were neither bright nor elevated; but on the extremities the eruption was of a very vivid hue, and distinctly raised above the surrounding surface. On the fifth day of the eruption it began to fade, and at the same time a large hard swelling was observed below the right side of the jaw. This rapidly extended, never suppurated, but became dark-coloured in the centre, and within the space of two days a large slough from the centre was discharged. Instead of the sore now assuming a healthy aspect, a process of slow ulcerative absorption commenced, by which its edges were undermined and enlarged, and every portion of the cellular tissue destroyed, so that the muscles, submaxillary glands, and external jugular vein were seen cleanly dissected and quite dry. The external jugular vein soon sloughed, and a similar process went on in the edges of the sore for six days, when the little patient sunk. Nitrate of silver; strong nitric acid; carrot poultices, &c., and tonics were tried, to arrest the sloughing; but everything failed.

Art. IX.—*Fourth Medical Report of the Western Lying-in-Hospital and Dispensary*, 31, *Arran Quay, Dublin.* By Fleetwood Churchill, M. D., Licentiate of the King and Queen's College of Physicians in Ireland, Lecturer on Midwifery, &c., and Physician to the Hospital.

During the past year, from January 1, 1839 to December 31, 1839, inclusive, 436 females have been attended; of these 111 were delivered in the hospital, and 325 at their own houses.

From this number we must deduct 18 cases of abortion, which will leave 418 cases of labour.

The number of children born amounted to 425 (254 were males, and 171 females,) 38 of which (26 males, and 12 females,) were still-born, or died immediately after birth: Of these latter,

10 were premature.
5 were breech presentations.
4 were footling do.
2 were arm do.
In 3 the funis prolapsed.
4 were crotchet cases.

The ages of 415 of the patients were ascertained as accurately as possible;

42 were under 20 years of age.
101 between 20 and 25 years.
126 between 25 and 30
71 between 30 and 35
57 between 35 and 40
18 between 40 and 45

The entire duration of labour was as follows in 309 cases,

In 94 it was under	6 hours.	In 10, it was under	48 hours.
92,	12	8,	60
75,	24	4,	95
25,	36	1,	110

The period which elapsed between the commencement of labour and the rupture of the membranes was noted in 328 cases.

In 40 cases it was under	2 hours.	In 5 cases it was under	30
107	about 6	4	38
70	10	3	40
43	14	2	50
31	18	3	60
11	22	3	70
9	26	1	80

In the same number of patients the interval between the rupture of the membranes and the birth of the child was as follows;

In 179 cases it was under	1 hour.	In 12 cases it was under	15
42	about 2 hours.	5	20
37	4	4	28
34	6	3	35
12	8	2	40
5	10	1	96

From the birth of the child to the expulsion of the placenta, there elapsed

5 minutes in	74 cases.	40 minutes in		10
10	81	50		2
15	60	60		14
20	30	From 1 hour	to 2 hours in	9
25	11	2	3	5
30	14	3	4	4
35	9	5	6	1

In 394 cases the presentation was as follows:

In 375 the head presented.
10 the breech.
5 the feet.
3 the arm.
1 the head and arm.

There occurred 7 twin cases. Their sexes and presentations were as follows:

No.	*Sexes.*	*Presentations.*	*Results.*
1.	2 females.	Both head presentations.	Both saved.
2.	Male and female.	Both hand do.	1 saved, 1 putrid.
3.	2 males.	1st foot, 2d head do.	Do. do.
4.	Male and female.	Both head do.	Both saved.
5.	Do.	Do. do.	1 putrid, 1 saved.
6.	Do.	1st head, 2d arm do.	Both saved.
7.	Do.	Both head do.	Do. do.

In 10 cases hemorrhage occurred between the birth of the child and the expulsion of the placenta, in 6 of which manual extraction was necessary. Five of these patients recovered, and 1 died of peritonitis.

Two patients were attacked with convulsions after labour, one died in a few hours, the other recovered.

Version was performed three times; twice in one of the twin cases; the mother and one child were saved, the second child was putrid.

In the third case both mother and child were saved.

The forceps were applied in one case, the child was putrid, but the mother recovered.

In 4 cases craniotomy was performed. All the women recovered.

Of the 436 cases 3 died, or 1 in 145.

The following tables will show the length of the first and second stages in certain cases, with the results.

Ten cases of labour of thirty-five hours duration.

			Results to	
	1st Stage.	*2d Stage.*	*Mother.*	*Child.*
In 10 cases,	33 hours,	2 hours,	Favourable,	Favourable.
2	31	4	do.	do.
2	27	8	do.	do.
1	24	11	do.	Still-born.

Five cases of forty-six hours duration.

			Results to	
	1st Stage.	*2d Stage.*	*Mother.*	*Child.*
In 2 cases,	42 hours,	4 hours,	Favourable,	Favourable.
1	45	1	do.	Unfavourable.
2	40	6	do.	Favourable.

In three cases of fifty-five hours duration.

			Results to	
	1st Stage.	*2d Stage.*	*Mother.*	*Child.*
In 3 cases,	48 hours,	7 hours,	Favourable,	Favourable.

I shall now give an abridgement of the more important cases from the Hospital case-book.

Case 1. *Apoplectic Convulsions.*— Ellen M'Donnell was taken in labour of her fourth child, August 2, and was delivered at 2 A. M. August 3, after a natural labour of ten hours. Mr Speedy was sent for a few hours afterwards, and on his arrival he found her in a comatose state, with respiration stertorous, pupils insensible to light, &c. Active antiphlogistic treatment was promptly adopted, but she died during our visit at 1 P. M. of the same day.

Case 2. *Epileptic Convulsions.*—Julia Short, aged 17, was delivered of her first child, November 20, after a natural labour of eleven hours. After the expulsion of the placenta she had a slight convulsion, which lasted a few minutes, and then ceased. The fits returned repeatedly in the course of the day, but her friends neglected to send to the hospital, and we consequently did not know it until the pupil who attended her paid his evening visit.

She was immediately visited by Mr Speedy and myself. We found her insensible, and were informed that the fits returned every half hour, and were evidently epileptic. Her face was flushed, her head hot, with a frequent and full pulse. She was immediately bled largely from the arm, and a purgative bolus and enema ordered. Mr Speedy visited her at 12 o'clock that night, and, finding that the fits had returned and the pulse still quick, he untied the arm and took away more blood.

November 21, 11 A. M. Convulsions continued through the night, though less frequently; pulse quick and full. *Venesectio ad* ℥xii.; blister to the head and neck; castor oil draught. During the day, the fits were less violent and the intervals longer, but the insensibility continued. In the evening, she seemed occasionally conscious, and she swallowed more easily. Ten ounces more blood were taken, with immediate benefit; the fits diminished greatly in violence and frequency, and soon ceased altogether. After this time she recovered rapidly.

Cases 3 and 4. *Version Cases.*—These presented so few peculiarities that I shall not detail them. One of the women had had six children previously, five of whom presented with the hand or arm, and as this was a double arm presentation, (she having twins,) it made seven times that she had undergone the operation of turning. She recovered quite well.

In the other case, the child was saved and the mother recovered.

Case 5. *Forceps Case.*—Mary Dannelly, aged 40, was taken in labour of her first child, April 3. The pains were ineffective for many hours, but they increased the next day, and at 12 p. m. April 4, the waters broke, and the head descended. The pains continued during the night and next day, but did not advance the labour. In the afternoon of the 5th April, I found her pulse quick, skin hot, tongue dry, &c. and it was evident that there would be danger in delay. I therefore applied the forceps, and delivered her easily and without injury. The child was putrid. She recovered well.

Case 6. *Craniotomy.*—Mary Proudfoot, aged 40, of small stature, was seized with labour, January 30, at 11 p. m. At 10 a. m. February 1, Mr Speedy saw her; the waters had been evacuated, but the *os uteri* was thick, rigid, and undilated; the head presented, and the pulse was quiet. Purgative medicines were given.

At 10 p. m. she was in much the same state, the pains frequent, but not very strong. Tartar emetic was given, with the view of relaxing the *cervix uteri.*

Feb. 2. *Os uteri* still rigid and undilated, though the pains were frequent during the night. Feels wearied for want of sleep; pulse 100 and strong; skin rather hot. *Venesectio ad* ℥xvi.

Feb. 3. The pains improved in strength and frequency after the bleeding, but they prevented sleep, and the patient is consequently much exhausted. The *os uteri* is but little dilated, so that the head remains above the brim of the pelvis. For the purpose of procuring rest, a full opiate was now given, which obtained two hours sleep. The pains then recurred, and continued during the day, and she became feverish with quick pulse, &c. After consultation with Dr Darby, although from the condition of the patient delivery was very desirable, yet, as it would be very difficult to accomplish it in this stage, it was resolved to wait until morning, unless the unfavourable symptoms should increase. The opiate was repeated.

Feb. 4. The condition of the patient not improved; pulse 130, with much fever, and but little relaxation of the *os uteri,* though the pains had wedged the head (covered with the cervix) into the upper outlet. It was evident that the operation could not be longer delayed without great risk, and therefore Mr Speedy proceeded at once to perforate the head and extract the child, which was not accomplished without the greatest difficulty. It was necessary to eviscerate the body as well as empty the cranium. The operation occupied three hours. The child weighed 15 lbs. The patient had afterwards a slight attack of peritonitis, which was subdued by the usual remedies, and she ultimately recovered.

CASE 7. *Craniotomy.*—Rose Bentley, aged 24, taken in labour, February 9th, at 7 A. M. The waters were soon afterwards discharged; the head was found presenting, and the pains were strong and frequent. About 3 P. M., the head descended into the cavity of the pelvis; and at 7 P. M., had made no further advance, notwithstanding very severe and frequent pains. Pulse 80, but intermitting; neither headach nor fever.

I was sent for at 11 P. M., and found the patient in the condition first described, and, as the general condition was favourable, I did not think it right to interfere, although the head had made no advance for eight or nine hours.

Feb. 10. 5 A. M. We were summoned to the patient, in consequence of her condition having become worse. The pains had continued strong for some hours after our last visit, but latterly became weaker; the pulse had risen, and there was much constitutional suffering. The head had not advanced, and it was evident that the natural powers were inadequate to the delivery.

I attempted to use the forceps, but found the head so impacted in the pelvis, that the blades of the instrument could not be introduced. This being the case, I at once perforated the head and extracted the child. The woman recovered well.

CASE. 8. *Craniotomy.*—Mrs Tully, aged 20. Labour commenced at 10 A. M., May 4, and the membranes gave way immediately. The pains continued strong during the day and in the evening; the head descended into the pelvis. The pains were incessant during the night.

May 5th 11 A. M. Pulse 100; patient complains of headach; skin hot; some abdominal tenderness; no advance of the fœtal head. The urine was drawn off and a purgative enema given.

A consultation with Dr Darby was held in the evening. The labour had made no advance. The patient was in a state of high excitement, with headach, quick pulse, and much fever. It was determined to deliver by craniotomy, which Mr Speedy accomplished with facility. The placenta was afterwards extracted. The woman recovered.

CASE 9. *Craniotomy.*—Eliza Doran, aged 40 Labour commenced at 9 A. M. October 31, followed by rupture of the membranes and suspension of uterine contractions.

September 1, 11 A. M., the pains returned strongly and frequently, the head presented, and the condition of the patient was good. The head descended into the pelvis in the afternoon, and then remained stationary.

September 2, 1 P. M. Very little advance has been made, and the constitution is beginning to suffer; the pulse is quick, the tongue dry, and the patient restless. A consultation was held, and it was deemed safe to wait a few hours to fix a fair trial to the natural powers.

In the night her condition became more unfavourable, and we were again summoned. It was evident that delivery could no longer be delayed with safety. The forceps were applied, but the head could not be moved, and therefore the head was perforated by Mr Speedy, and the child extracted. She was attacked with hysteritis afterwards, but was relieved by the usual means.

CASE 10. *Puerperal Peritonitis, fatal.*—Mary Dunne, aged 36, admitted into Hospital on Friday, April 23. Her labour could scarcely be said to have fairly commenced. She had occasional pains for some days, for which opium was given, as they deprived her of rest without dilating the *os uteri.* During this time her mind was anxious and depressed, and her pulse rather quicker than natural.

On Saturday, April 27, true labour-pains came on, and on Sunday morning at 6 o'clock she was delivered of a living female infant. Before the placenta was expelled, alarming hemorrhage came on, and Mr Speedy removed the placenta manually. The flooding was arrested, but not before it had blanched the patient, and reduced her to an almost lifeless state. By the diligent exhibition of stimulants, reaction was produced, and the patient appeared likely to do well, until Monday evening, when she became slightly delirious, with very quick pulse, but no abdominal tenderness. On Tuesday morning, these symptoms had subsided, but towards evening they returned worse than before. The pulse was very quick; the respiration hurried; the abdomen swollen and tender; and the countenance anxious and collapsed; with delirium, &c. All the most appropriate remedies were tried, but with no effect, and she died on Wednesday at 10 A. M.

Post mortem Examination twenty hours after death.—A quantity of serum with flakes of lymph was found in the peritoneal sac, and a degree of vascularity of the serous membrane itself. The uterine veins contained purulent mater, but the substance of the uterus was healthy; the right ovary was dropsical; the other viscera were sound.

This poor woman had been very anxious for some time previous to labour, on account of a situation for which she was a candidate, and this may have had an unfavourable effect upon the labour.

The notes of the third fatal case have unfortunately been lost.

136, *Stephens Green, West,*
February 8, 1840.

ART. X.—*Cases of Poisoning by Arsenic, Sulphuric Acid, and Muriate of Mercury.* By ALEXANDER WATSON, F. R. S. C. E., Surgeon to the Royal Infirmary, &c. &c.

THE three following cases of poisoning from arsenic, sulphuric acid, and muriate of mercury, illustrate the effects of those substances, and are therefore deserving of being recorded.

CASE 1. *Poisoning from Arsenic.*—Peter Baulks, a collier, about 45 years of age, residing at Dewartown, in the parish of Borthwick, near Edinburgh, seemed to have lived unhappily with his wife, who, in revenge for a blow she had received from him, purchased arsenic, and administered a quantity of it to him along with salts, on the morning of the 28th April 1835, of which he died in nine hours after. Mrs Baulks having been tried on the 13th July 1835, and found guilty, was afterwards executed for the murder thus committed.

Baulks took the dose of salts and other ingredients, administered to him by his wife, about ten o'clock on the morning of the 28th April. He was very soon afterwards seized with vomiting, pain of the bowels, and purging, accompanied with great prostration of strength. This illness, Mrs B. said, was the cholera, but would not hear of a doctor being called. To the neighbours who had come in to see him, Baulks said it was the dead scour that was upon him, and blamed his wife for the medicine she had given him. He continued ill, and gradually became weaker till seven o'clock P. M. when he died, having been ill nine hours.

At the request of the Sheriff of the county, I proceeded with my assistant, Mr Rae, now surgeon at Stirling, to inspect the body of Baulks, on the 3d of May, in order to report as to the cause of his death.

On opening the chest, we found the lungs to be affected with the blackness or spurious melanosis so frequently observed in the lungs of colliers.

When the viscera of the abdomen were exposed, no unusual appearance was observed externally. There was no appearance of inflammation at any part either of the stomach or bowels. The whole of the intestinal canal from the tongue downwards was carefully removed from the body without being opened, and the escape of the contents being at the same time prevented by ligatures.

Upon the following day, these parts were taken by me to the College, in order that they might be examined, and their contents analysed by Professor Traill, as well as Mr Rae and myself.

The glands of the mucous membrane at the root of the tongue, and at each side of the larynx, were much enlarged, and the whole of the membrane presented an appearance of increased vascularity and unusual irritation.

On cutting open the œsophagus and stomach, their internal surface was thickly coated with mucus. The stomach contained about a pound of viscid bloody fluid, which was carefully removed into a clean vessel. A few small white particles were seen among the mucus, with which the inner surface of the stomach was coated, and were carefully removed by means of a clean piece of silver, and placed upon a glass plate. The mucous membrane lining the stomach was generally of a deep-red colour, with the exception of two patches, which exhibited a greenish or ash-gray colour. Near to the cardiac orifice a portion of the membrane was abraded. About three feet of the small intestines were also laid open, but the mucous membrane presented nothing unusual in appearance, and no white particles could be detected upon it.

By boiling a portion of the fluid contents of the stomach, and adding some distilled acetic acid, while hot, the animal matter was coagulated. When this was separated by filtration, the fluid was tested by nitrate of silver, the ammoniacal nitrate of copper, and sulphuretted hydrogen ; but the presence of arsenic could not be distinctly traced in it.

The small white particles which had been picked from the inner surface of the stomach, being collected and put into a tube, and boiled in distilled water with the addition of a little potash, were almost entirely dissolved. The animal matter being then separated from the liquor by acetic acid, and the filtered liquor subjected to a stream of sulphuretted hydrogen gas, the yellow colour given to the fluid, and the orange-coloured flaky precipitate produced by the presence of arsenic, soon became manifest. The excess of sulphuretted hydrogen having been removed by boiling, the liquid was evaporated to dryness in a small glass cup. When the precipitate became dry, it was carefully scraped from the glass cup, and introduced into a small glass tube, along with some black flux. Upon the application of heat, metallic arsenic was obtained.

Upon boiling a portion of the more viscid and solid contents of the stomach, which remained at the bottom of the vessel into which they had been put, in distilled water and potash, treating this mixture with acetic acid in excess, and subjecting it to a stream of sulphuretted hydrogen, a copious arsenical precipitate was obtained, which was further demonstrated by the tests of reduction and oxidation.

In this case, therefore, we had no difficulty in certifying that death had been occasioned by arsenic.

Case 2. *Suicide from Sulphuric Acid and Incision of throat.*—Widow H., aged 60, a stout corpulent woman, was brought into the Royal Infirmary on the evening of the 7th February 1838, having her throat extensively cut, and died shortly after admission. It was afterwards ascertained that she had purchased two ounces of sulphuric acid, and swallowed it about a quarter of an hour before cutting her throat. After having taken the acid, she was seen writhing about in great pain; she had then put one of her late husband's razors into her pocket, and left the house to cut her throat. She inflicted the incisions on arriving at the street, was immediately seen and conveyed to the Infirmary, which was close by. This individual, therefore, probably did not live above half an hour after taking the acid into the stomach.

The inspection of the body took place at one o'clock on the 9th February; and as no circumstance had then come to my knowledge leading to the supposition of poison having been swallowed, my attention was at first directed chiefly to the examination of the wound and the state of the heart and blood-vessels.

The external wound across the throat was immediately under the lower jaw, and about five inches in length. It divided, by a pretty clean incision, the integuments, upon which there were marks of four incisions,—the larynx between the *os hyoides* and thyroid cartilage, the anterior part of the *platysma myoides*, the anterior border of the sterno-mastoid, the omo-hyoid, the sterno-hyoid, and sterno-thyroid muscles, were divided. The epiglottis was cut across transversely at its base, as also the anterior half of the muscular parietes of the pharynx. The anterior facial vein, at its junction with the common facial, the pharyngeal and lingual veins of both sides, at their termination in the internal jugular, and the internal jugular vein of the left side, were freely divided. The superior subcutaneous cervical plexus of nerves, and the superior laryngeal nerves, were also cut across. The carotid arteries were entire. The trachea and larger bronchial tubes were filled with coagulated blood. The quantity of congested blood in the lungs was considerable. With the assistance of Dr Handyside, I secured by ligature all the veins and arteries connected with the heart. There was a large globule of gaseous fluid, and some blood in the *vena anonyma*, and a quantity of the same could be pressed from the right ventricle of the heart into the pulmonary artery, so as to distend it. The heart was flaccid and almost empty. Upon removing the heart from the body, and opening it carefully under water, Dr Handyside collected in a receiver about two drachms, by measure, of gaseous fluid, which Dr Fyffe was requested to examine, and obligingly favoured us with the following analysis of it. "The gas you left with me yesterday is mainly atmospheric air, containing the usual proportions of oxygen and nitrogen, with a slight admixture of carbonic acid. The acid gas seemed to be in greater proportion than usually exists in air, but, owing to the minute quantity of gas left with me, I could not ascertain its proportion with precision."

Mr. WATSON'S CASE.

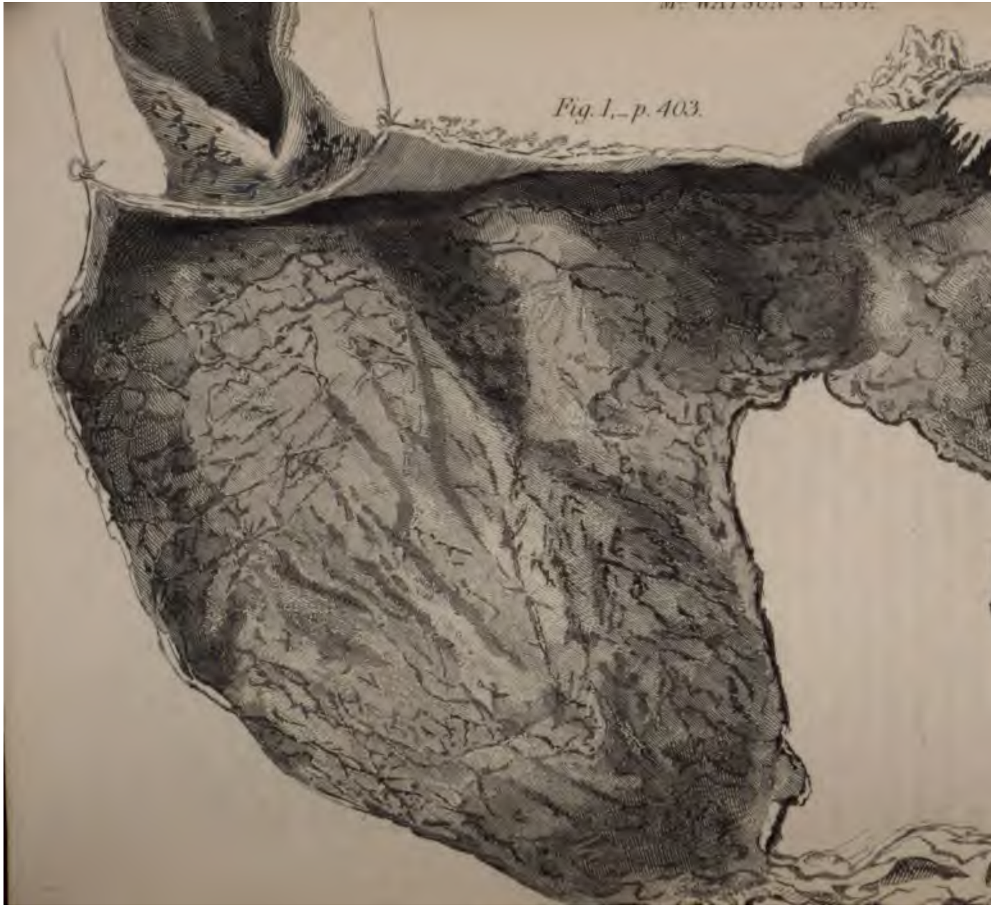

Fig. 1.—p. 403.

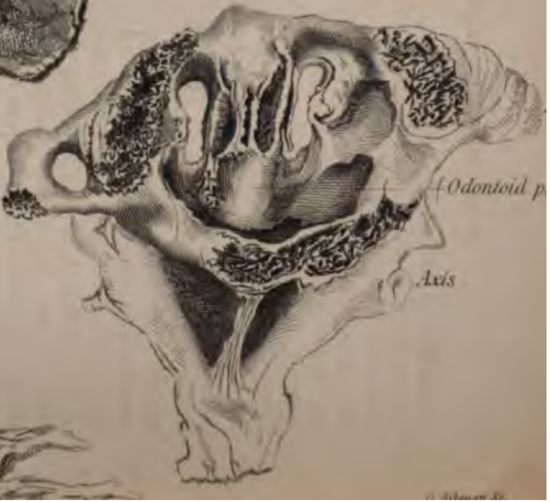

Fig. 2.—p. 377.

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On opening the cavity of the abdomen, the peritoneum lining the anterior part of its parietes was extensively corroded, charred, and decomposed, by which the fibres of the muscles beneath it were laid bare. The omentum was extensively destroyed in a similar manner. The whole of the peritoneal covering of the intestines which was in contact with the anterior parietes of the abdomen was changed to a bluish gray colour. The small intestines were exceedingly contracted. About three-fourths of the stomach were wanting, having been completely dissolved and decomposed; and the anterior part of the small arch which remained was softened, as if it had been partially decomposed by long maceration in water. The mucous membrane had a blackened and charred appearance. The mucous membrane lining the œsophagus was black. The upper part of the duodenum was also softened and corroded. The contents of the stomach, mixed with oily fluid, were extravasated into the abdominal cavity, as also the remains of the decomposed parts. The erosion of the peritoneum was chiefly confined to the right side, at and below the stomach. The peritoneal covering of the liver was condensed and firm to the touch, of a gray colour, having a corroded appearance, and some black patches upon it.

The coats of that part of the great arch of the colon in contact with the stomach were also corroded.

The blood-vessels of the parts affected were distended with hardened dark-coloured blood.

After macerating the remaining part of the stomach in water, and this being afterwards filtered, a white precipitate was obtained from a solution of muriate of baryta added to it, thereby giving evidence of the presence of sulphuric acid.

As already stated, I had no knowledge at the time of the dissection that poison of any kind had been swallowed, but when examining the abdomen, and seeing the above state of the parts, I observed to those beside me that the effects which the fluid in the abdomen had upon the fingers, of smarting and corrugation of the skin, which I experienced, was very much the same as those of sulphuric acid somewhat diluted.

Whether the immediate cause of death in this case was owing to hemorrhage from the wound in the throat; suffocation from blood in the air passages; the admission of air into the heart by the veins; or to the sulphuric acid swallowed, it is not easy to determine. Probably more than one of these contributed to produce the fatal result. It is also difficult to determine how much of the disorganization produced by the sulphuric acid took place during life, and what changes took place after death. Upon these points I shall not at present venture to speculate.

A view of the appearance of the stomach and its corroded portion is given in Plate III. Fig. 2.

CASE 3. *Of Poisoning from Corrosive Muriate of Mercury.*—The following case came under my notice, being the subject of judicial investigation.

Alexander Bell, aged 47, a dyer from Musselburgh, was admitted into the Royal Infirmary, under the care of Dr Shortt, on the 3d September 1838. The following is the statement of his case contained in the Journal of the Hospital.*

" States, that, on the 26th ultimo, feeling rather unwell, he applied to an apothecary for a calomel powder, from whose wife he received about a teaspoonful of a heavy white powder, which he took in tea. While swallowing it, felt an acute burning sensation in the throat and stomach ; and immediately after was seized with stiffness of the jaws, purging and vomiting, great pain in the bowels, accompanied with cramps, stools dark-coloured and bloody, pain in the mouth continued with ptyalism, and occasionally the pain in the bowels was very severe."

On admission complains of great weakness ; the jaws stiff and swollen ; there is good deal of enlargement of the parotid gland on the right side ; the gums swollen and spongy ; there is great ptyalism, with strong mercurial fetor of the breath; pulse 64, and very weak.

" Sept. 5th, Feels the mouth considerably easier.

" Sept. 6th, During the night, and while asleep, discharged from the mouth without vomiting, a considerable quantity of fluid blood, and feels weaker this morning.

" Sept. 7th, Discharge of blood returned last night, and the patient feels much weaker this morning. Bowels rather open but no blood in the stools.

" *Vespere.* The bleeding has returned, and strength failing.

" Sept. 8th, Has felt some benefit from the lotion, but the hemorrhage has not been completely arrested by it. Sleeps a good deal ; pulse 100, scarcely to be felt ; whole appearance denoting extreme exhaustion.

" Sept. 9th, The patient passed about six pounds of blood by stool about six o'clock last night, and died a few minutes afterwards."

In consequence of my being requested by the legal authorities to examine the body of Bell, and report as to the cause of his death, I did so along with Dr Shortt on the 9th of September 1838, and the following are the morbid appearances which we observed.

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* An account of this case was published in this Journal for January 1839, by a Mr Alexander Wood, surgeon, who happened at the time to be acting as clerk to Dr Shortt in the Royal Infirmary. Besides the impropriety of publishing the case while it was undergoing judicial investigation, contrary to the regulations of the Managers of the Infirmary, and without my permission, allusion is there made to the contents of an official report drawn up by Dr Shortt and myself, which Mr Wood was in confidence allowed to read over.

Ulceration of the gums and mucous membrane of the fauces and œsophagus in patches of various sizes. The papillæ at the root of the tongue were much enlarged. There was no redness or increased vascularity of the peritoneum at any part. The stomach and bowels seemed to contain only grumous blood and mucus. When this was removed by washing, the mucous membrane of the stomach was much more red than usual, from increased vascularity. At the great arch of the stomach this was increased to a very dark-red colour, probably by being dyed by the presence of blood in it. About two inches from the cardiac orifice of the stomach, and extending downwards to its greater arch, there was an extensive ulceration upon the inner surface, of a triangular shape, each side of which measured about three inches. Several sloughs formed of the mucous membrane were hanging from the muscular coat, which was exposed in the process of separation at this part. At several other places there were ulcerations forming by the separation of sloughs from the mucous membrane, but of much smaller size. The margins of these ulcerations had a yellowish-green appearance, and lymph appeared to be effused upon the ulcerated surface. Appearances somewhat similar, but to a much less extent, were observed on the mucous membrane of the colon. The glands or mucous papillæ of the rectum were much enlarged.

The report, to which allusion has been made, which was drawn up by Dr Shortt and myself, and transmitted to the legal authorities, stated shortly the morbid appearances found on dissection. It also contained an account of the symptoms under which Bell had laboured since the 26th of August; and stated as our opinion, that, considering these symptoms in connection with the morbid appearances, there appeared to us "no doubt that the illness and death of the said Alexander Bell had been caused by his having swallowed a large quantity of some of the more corrosive preparations of mercury."

We preserved some of the contents of the stomach and bowels, as also some of the blood, for chemical analysis; but, as was anticipated, without any satisfactory result, partly from the length of time the patient lived after the poison was taken, and partly from the difficulty and uncertainty which attends the detection of mercury in the body.

It was afterwards ascertained that Bell had himself written a note for corrosive sublimate of mercury, which he sent to the shop from which it had been obtained, as a remedy for some complaint.

Having stated fully and minutely the facts connected with these cases of poisoning, I purposely refrain from entering into any speculative remarks or general inferences, because I consider general conclusions drawn from individual cases to be of no value. The cases are therefore detailed in order that they may be compared with other cases of the same kind, generalised, and commented upon.

There is, however, one circumstance which occurred in the first and third of the cases above described, which is worthy of notice in a legal point of view. The circumstance to which I allude is, that the arsenic and corrosive sublimate were very loosely dispensed and sold to the individuals who asked for them, by unqualified persons (females), in absence of the masters of the establishments. Had greater caution been employed in the sale of these articles, the very disastrous consequences to which they led might possibly have been prevented. These, and other similar cases, which are of far too frequent occurrence, make it very necessary that some restriction should, *by a legal enactment*, be put upon the sale of such deadly drugs.

51, *Queen Street, Edinburgh,*
24th February 1840.

ART. XI.—*Account of a Case of Suicidal Poisoning by means of Concentrated Sulphuric Acid.* By DAVID CRAIGIE, M. D., &c., Physician in Ordinary to the Royal Infirmary.

DANIEL MACLEAN, aged 49, was admitted into the Royal Infirmary, about half-past ten on Tuesday the 18th of February 1840, under the following circumstances.

In early life he had been in the United States of America, where he pursued the profession of a teacher with considerable success, so as to maintain himself in a state of comfort and respectability, and even to save some money. With this he returned, in 1823, to this country, and commenced business at Leith as a dairy-keeper, but, not being very successful, he entered, in 1825, into the service of a respectable druggist and manufacturing chemist, where he continued to the present time, a period of at least fifteen years. During the whole of this long period, he is represented by the gentleman by whom he was employed to have conducted himself with the greatest steadiness and propriety, to have been habitually sober, temperate, and regular, and to be a person in whose honesty and integrity the strictest confidence could be reposed. His duties were various; and for several years past he has been chiefly occupied in the manufacture of soda-water upon the large scale, in the preparation of which sulphuric acid is poured on chalk, in order to extricate carbonic acid gas.

Several weeks ago, he betrayed symptoms of great despondency and lowness of spirits, with some anxiety about the condition of his soul, and, upon one occasion, he expressed to his master his belief that he had done something to peril, if not to ruin his soul. His conduct, however, was always perfectly correct in a moral and religious point of view, excepting that he ceased to go to church or attend divine service in public. In various other matters also, he was observed by his wife to act in a singular and eccentric manner. He continued frequently gloomy and despondent, occasionally confused and void of recollection. On Saturday the 8th of February, it was ascertained that he swallowed, with the manifest intention of destroying himself, two drachms of laudanum and six grains of opium. These produced little effect beyond considerable drowsiness, and, after the use of two doses of sulphate of zinc, (one scruple in each,) with some mustard infusion, which was followed by vomiting, he completely recovered.

During the last two days his despondency seemed abated so much as to remove all suspicions of his intention of attempting suicide. On the morning of Tuesday, the 18th of February, however, about twenty minutes before ten o'clock, he was found lying on the floor, and near him a small four ounce jar, from which it was ascertained that he had taken at least two ounces of sulphuric acid, of sp. gr. 1840.

It was ascertained that the acid must have been swallowed about seven or eight minutes after nine o'clock, so that he must have had it in the stomach at least half an hour before he was seen.

One of the gentlemen in the establishment immediately gave him some magnesia suspended in water, and of this he swallowed a considerable quantity.

The medical gentleman who was requested to visit him, and saw him about ten minutes after ten, recommended magnesia to be given very frequently. He continued, however, much in the same state, with rapidly increasing weakness. At 11 o'clock, he was brought to the Royal Infirmary, and presented the following appearance. The countenance was pale, dingy, and death-like; the surface of the body cold and clammy; the feet and forehead perfectly cold; the eyes fixed, and with the pupils slightly contracted, but not very sensible to light; the pulse was exceedingly small, 64 in the minute; and the respiration 36, heaving, and with violent spasmodic motion of the muscles of the neck, and depression of the lower jaw at each inspiration, so as to form a sort of gasping motion. At the same time the muscles of the abdomen were hard and rigid; and when the abdomen was pressed, he gave indistinct indications of pain; he was observed also to place his hand on the pit of the stomach, with an expression of suffering and anguish.

The mouth, lips, tongue, and fauces, were white and slightly excoriated. There was no vomiting.

On his admission he was barely able to articulate his name and age, and to all other questions he was mute, and never spoke after; but was able to swallow, and took a large quantity of magnesia and chalk suspended in water. Soon afterwards the œsophagus tube was introduced, and the stomach pump attached, and a considerable quantity of water injected, and immediately afterwards the contents of the stomach were extracted by the pump. These were found to be deeply tinged with blood, but did not affect the colour of litmus-paper. A little after he was ordered some wine, which he swallowed, and some magnesia suspended in water. The pulse at this time, *i. e.* half-past 12 o'clock, was 56 in the minute, extremely feeble. The respiration was 20, still performed in the same laborious manner, with spasmodic motion of the muscles of the neck, and gasping depression of the lower jaw at each inspiration. In this state he continued about fifteen or twenty minutes longer; and at ten minutes before one o'clock he ceased to breathe.

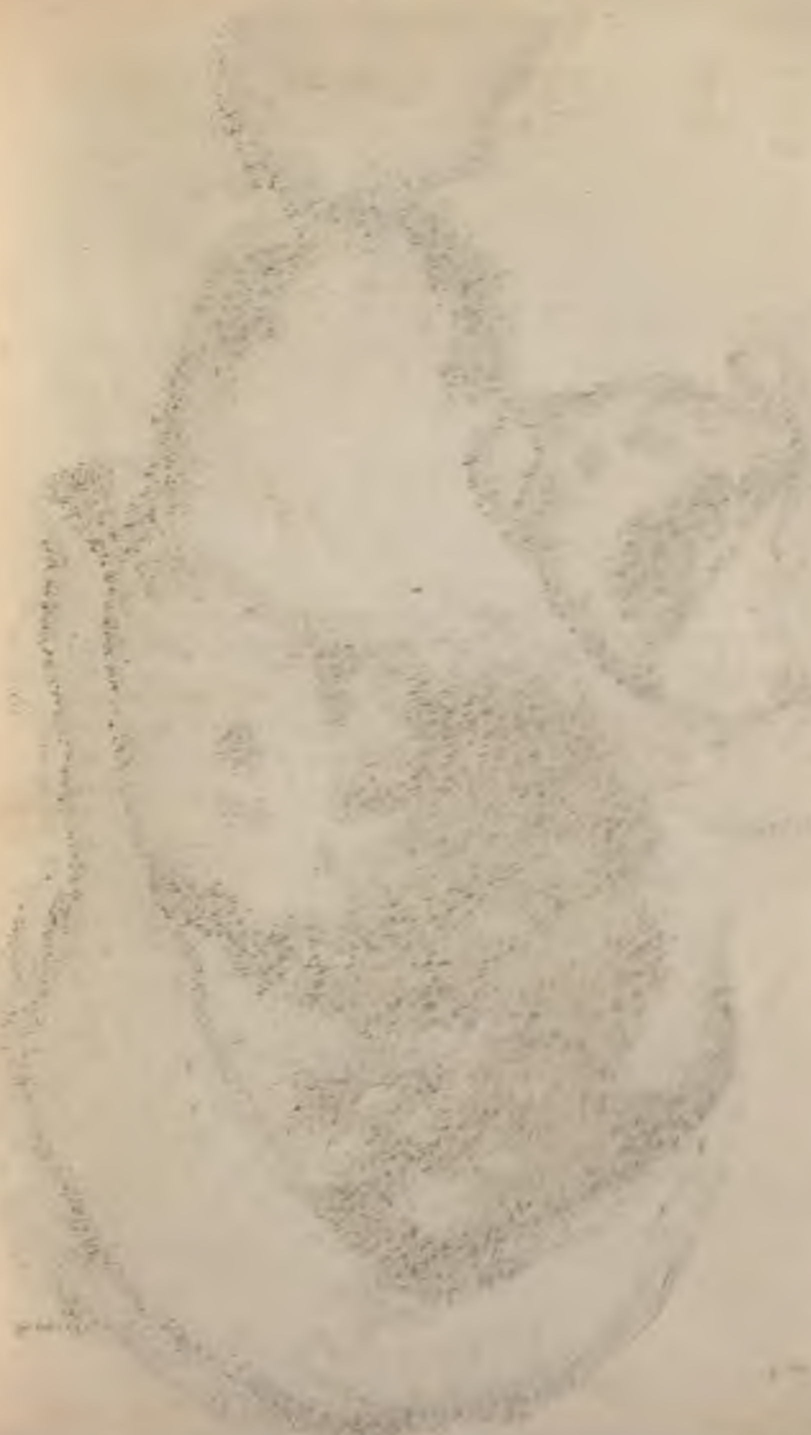
The body was inspected twenty-four hours after death, on Wednesday, the 19th of February 1840, and presented the following appearances.

Upon opening the cavity of the abdomen a quantity of dark-coloured turbid serous fluid was found, amounting to at least one pound. This tinged instantaneously red litmus-paper, and the peritoneum in like manner, both over the stomach, liver, and intestinal tube, imparted a red colour to litmus-paper the moment the membrane was touched. The whole of the peritoneal coat of the stomach and the transverse arch of the colon was of a dark blue colour, as also that of the liver, spleen, and upper part of the intestines. The intestines were a good deal contracted and shrunk and their peritoneal surface seemed slightly roughened. The peritoneal covering of the diaphragm gave immediately a red tint to litmus-paper; the diaphragmatic pleura tinged litmus-paper more feebly.

The pericardium contained a dark-coloured turbid fluid, and both this and the surface of the pericardium reddened litmus-paper very feebly. The tongue, œsophagus, and larynx, with the stomach and duodenum, were removed in connection, and a longitudinal incision was then carried down the œsophagus and through the stomach, along its posterior surface, between the great and small arch. It was found to contain between two pounds and a-half and three pounds of a dark bloody coloured fluid, with masses of soft chalky matter. Upon removing this and washing it the following appearances were recognized.

The mucous epidermis of the uvula, pharynx, and tongue, was whitened, opaque, shrivelled into folds, indurated, and coming off in shreds and patches. In the lateral parts of the pharynx especially, the mucous epidermis was completely detached from the mucous corion, and lay in the form of a loose opaque membrane over it. The same was observed in the mucous membranes covering the *cornua* of the *os hyoides*, the posterior part of the thyroid cartilage, and the *epiglottis*.

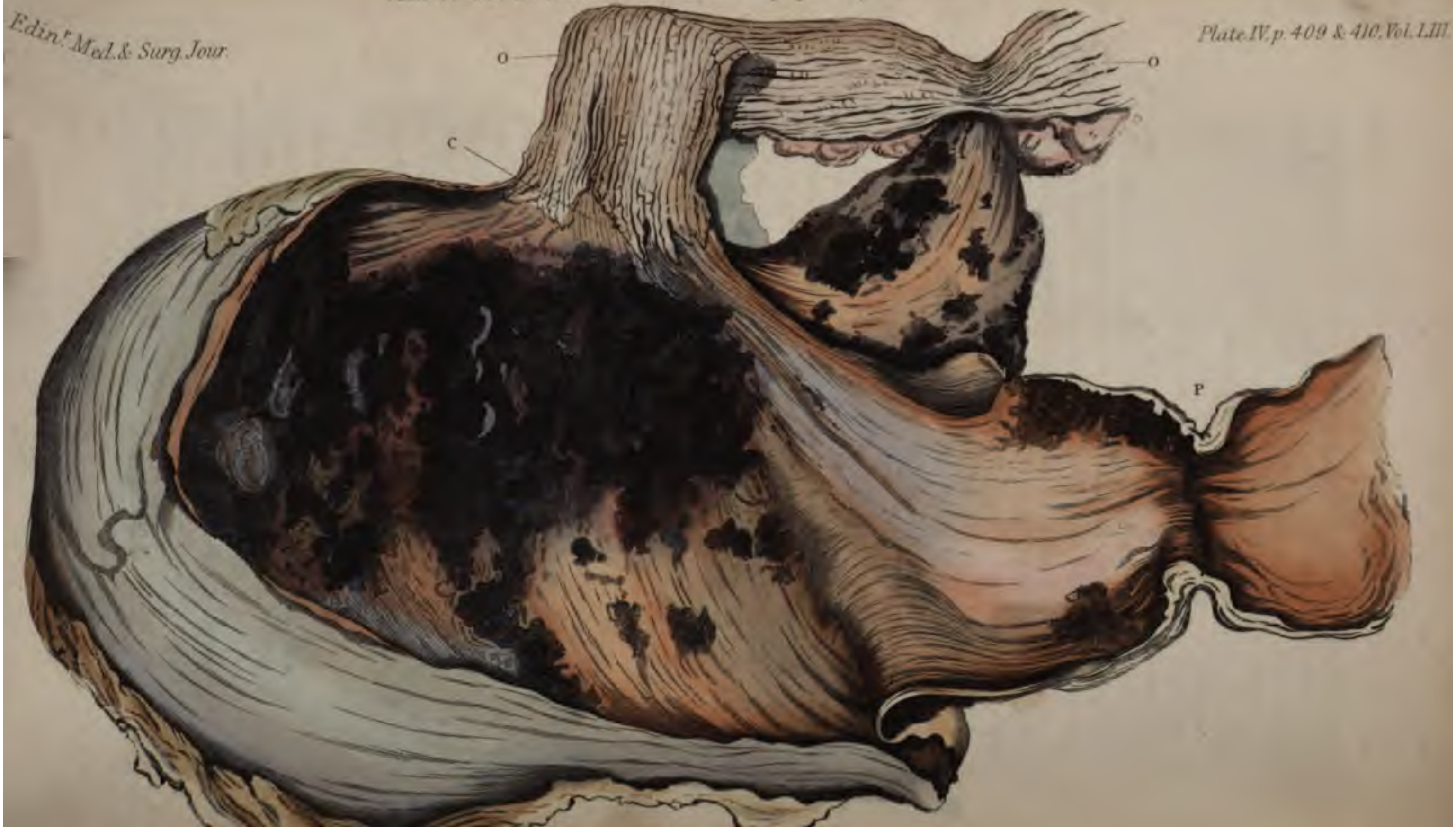
The mucous epidermis of the œsophagus was in like manner



Edin^{r}. Med. & Surg. Jour.

Plate IV, p. 409 & 410, Vol. LIII.

View of the Stomach after Poisoning by Sulphuric Acid



opaque, shrivelled, corrugated, in longitudinal folds, and in some parts it was peeling off from the mucous membrane of the œsophagus. The lower end of this epidermis at the cardia presented its fringed appearance, and each partition was separated from the adjoining one,—exposing intermediate spaces of the denuded mucous membrane.

The mucous membrane of the stomach was throughout of a dark-red and brown colour. That in the immediate vicinity of the cardia, especially at the anterior part of the stomach, presented an extensive patch of a dark-brown or black colour, much roughened, indurated, and prominent. Similar indurated, dark-brown, and elevated patches were formed in the cardiac portion of the stomach in its posterior wall; but they were less extensive than those in the anterior part. Similar patches were found on the mucous membrane of the anterior part of the stomach, near the large arch. The only part of the stomach totally free from these dark-coloured, indurated, elevated patches, wasa small portion of the cardiac region, and the greater part of the pyloric; but the whole of the membrane was roughened, and the substance of the stomach, especially the muscular coat, was thickened, indurated, and shrunk. The pyloric region of the stomach was much thickened and indurated, and its mucous surface was covered with a quantity of rough opaque membranous matter in shreds and patches, which, upon careful examination, proved to be the mucous membrane altered and indurated by the action of the acid, and detached from the submucous membrane which was thus exposed.

The duodenum was much contracted, and its coats were thickened. Its mucous membrane was of a deep brownish yellow colour, considerably roughened, and in various points coming off from the submucous tissue.

The ileum and the whole of the small intestines were more or less contracted; their mucous membrane, in general, was of a bluish gray colour, contracted, thickened, but not eroded; the mucous membrane became of a more natural colour as it approached the lower end of the ileum; and the mucous membrane of the cœcum and the ascending arch of the colon were nearly natural.

In the transverse arch of the colon, however, the mucous membrane, especially where it was contiguous to the stomach, was thickened, indurated, red, and roughened.

The vessels of the stomach, the coronary artery, the *gastro-epiploica dextra* and the *gastro-epiploica sinistra* and their branches were distended with solid coagula of blood, which was very much darkened, and when removed resembled masses of injection. The superior mesenteric arteries were found near their trunks in the same state; and even the arteries of the omentum and mesentery generally were all distended with solid, firm, dark-coloured coagula, exactly as if they had been injected after death.

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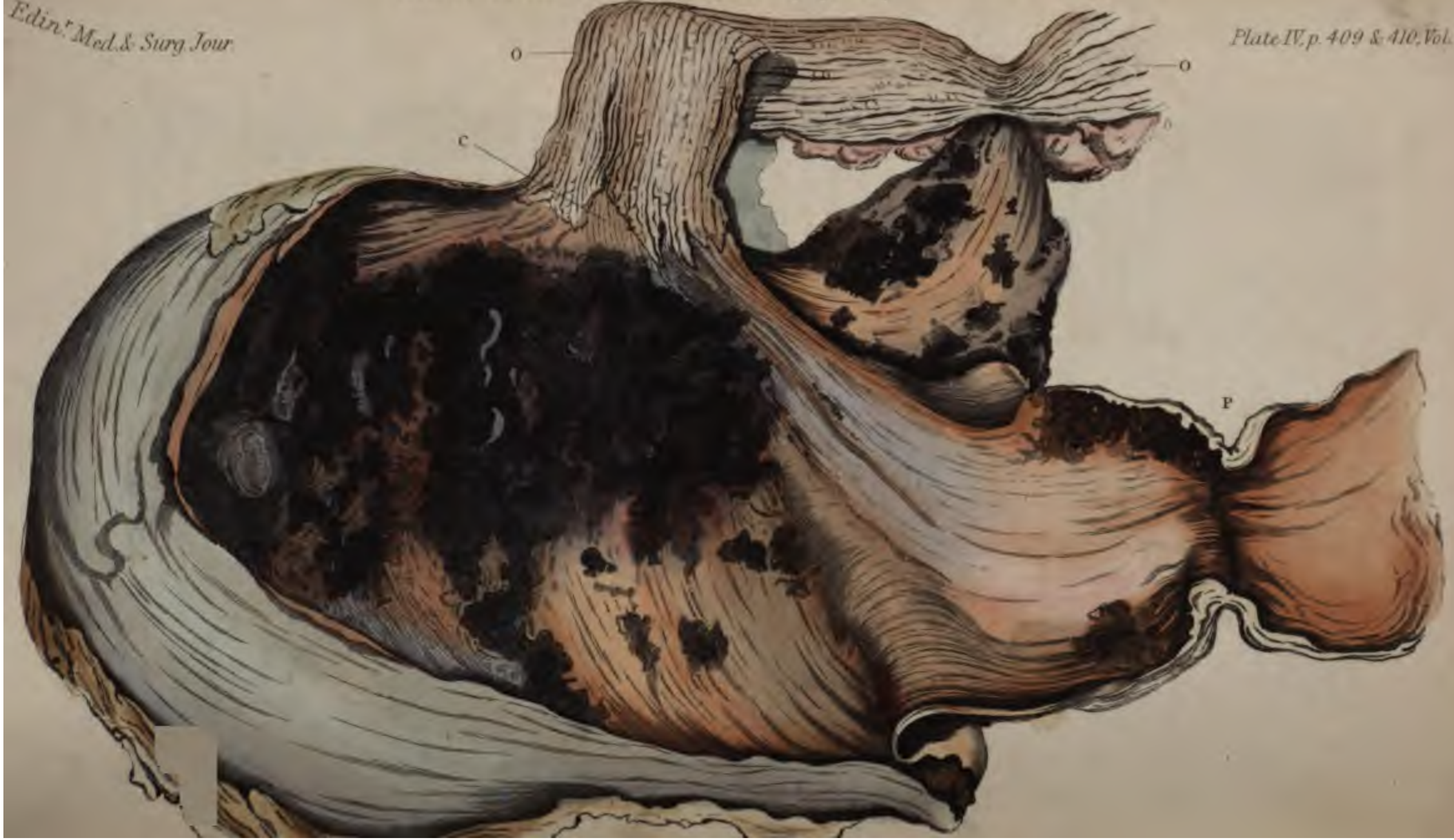

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No perforation of the stomach was found, notwithstanding the most careful examination of the organ, both before and after its removal from the body.

The whole of the lower and anterior margin of the liver was of a dirty blackish colour, extremely hard, friable, and inflexible, as if it had been par-boiled, and this change in consistency and appearance, penetrated at the lower margin of the liver, where the organ was thinnest, about a quarter of an inch into the liver. In the thicker part of the gland, it penetrated to the depth of about from one to two lines.

The peritoneal coat of the spleen was of the same dirty brownish colour, and was in like manner very much indurated. Where the organ was denuded, however, it was soft, and after some exposure to the air was slightly reddened.

The lungs were perfectly healthy, and free from adhesions.

The heart was also healthy; but the blood contained in it, and the large vessels was remarkably fluid. The valves of the heart were perfectly healthy.

The kidneys were in their cortical matter of a considerably lighter colour than natural, being of a sort of fawn colour; and the striated texture of the cortical portion had partly disappeared, and was succeeded by a granular appearance.

The arachnoid membrane and *pia mater*, especially over the hemispheres, and on each side of the falx, were much thickened and very opaque, in consequence of sero-albuminous fluid effused into the sub-arachnoid tissue, and the convolutions were depressed and atrophied by the thickened membranes. The membranes at the base of the brain were healthy, as was the brain itself.

The figure in Plate IV. presents a view of the appearance of the mucous membrane of the œsophagus and stomach. The mucous epidermis of the œsophagus (O O) is seen of a light-fawn colour, much shrivelled, quite opaque, and in many points detached from the subjacent mucous membrane.

The stomach is opened by an incision along its posterior wall, between the small and the large arch. The part of the stomach seen is the inner surface of the anterior wall entire, much charred and indurated; and portions of the posterior wall rather less charred, but still very much injured. C is the cardia, P the pylorus.

It is important to observe, that the inspection of the brain showed that this man had been labouring under chronic meningeal inflammation. The thickening of the cerebral membranes over the upper or coronal region of the hemispheres, the opaque appearance, the opaque whitish fluid which had been effused into the subarachnoid tissue, and the atrophy, or sinking and separation of the convolutions, all showed in the clearest manner that this man had been for months the subject of a chronic inflammation of the cerebral membranes, which rendered him no longer a responsible agent.

In the case now detailed of poisoning by sulphuric acid, three circumstances deserve attention; *first*, the quantity taken; *second*, the length of time during which the acid was allowed to act on the stomach; and *thirdly*, the speedy fatality of the agent.

1. It is believed that at least two ounces were swallowed; and though it must always be difficult to ascertain in cases like the present the exact amount taken, there seems good reason to believe, that the quantity could not be much below this amount. More than this he might have taken, because he had swallowed the acid privately, and he had access to it in unlimited quantity; while in the vessel, which he had used in swallowing it, none was left. The vessel was a four-ounce gallipot, and as he must have poured the acid from the carboy, or large glass jar, into this, and as some acid was afterwards found on the floor immediately below the carboy, as if it had been spilt in pouring it from the latter, it was inferred that the gallipot must have been nearly full, if not quite full. He might, indeed, therefore, have taken three ounces of oil of vitrol.

2. The time which was allowed to elapse between the period at which the acid was swallowed, and the use of neutralizing agents, was, as nearly as could be ascertained, at least half an hour. He was seen a little before nine, performing his customary duties in the usual manner. After nine he had to descend a flight of steps, and open several doors and windows, before he could have sufficient light to get the acid; and this must have occupied several minutes. It is inferred, therefore, that he swallowed the acid, as nearly as could be calculated, at some time between seven or eight and ten minutes past nine; probably not later. After this period he was not observed by any one, till about twenty minutes before ten, when the attention of a young gentleman of the establishment, who had gone down stairs to one of the underground apartments, was attracted by the sound of a person breathing rather heavily, and with a peculiar noise; and the gentleman finding him lying on the ground in an inner dark chamber, he immediately communicated to another gentleman up stairs his suspicion that some accident had happened to Maclean. The latter immediately went to the place, a dark under-ground apartment, and found Daniel Maclean lying on the right side, with his knees drawn up, his person doubled up, and his face buried in the straw, breathing heavily, and with some rattling noise, as if proceeding from a collection of mucus in the throat. His face was death-like, pale, and void of expression; the surface was covered with a cold clammy sweat; the pulse was slow, and almost imperceptible; he was insensible to external impressions; and seemed not to hear, and made no answer to questions.

This was as near as could be calculated about twenty minutes before 10, so that at this time the acid must have been acting on the stomach at least thirty minutes.

It may not be improper to state here, that he is with great probability supposed to have drank some water after swallowing the sulphuric acid; for the crane of a water pipe in the adjoining apartment was found open and the water running from it. This must have certainly increased the rapidity of the action of the acid, though that had evidently acted with great energy, and would have done so without the addition of water.

After being found in the position now mentioned, he was immediately conveyed up stairs; and, from the motion and exposure to the fresh air, he recovered some degree of sensibility and consciousness. He seemed still, however, unable or unwilling to speak, and to questions put with the view of ascertaining the cause of his present state, he merely pointed to his lips, and uttered the single word "vitriol." The lips were at this time observed to be blanched and slightly excoriated; and no doubt could be entertained from his answer, his appearance, and the fact of the gallipot being found close by the open carboy, that sulphuric acid had been swallowed. A young student of medicine, then in the establishment, immediately gave him carbonate of magnesia suspended in water, and a single draught of carbonate of lime. Soon after this he brought up by eructation and a sort of spouting motion from the stomach, some fluid, which effervesced as it fell on the floor; but this was the only approach to any thing like ejection of the contents of the stomach. And at the same time, when the epigastric region was pressed, he gave indications of great pain and internal suffering. Soon after some olive oil was administered; and the use of this was followed by great relief.

These circumstances are mentioned in order to enable the reader to judge of the great injury caused by this acid on the tissues of the stomach, both by reason of the large quantity and the time during which the acid, in its concentrated form, must have been acting on the villous membrane and other tissues of the stomach. It is next to impossible to doubt that all the mischief, as disclosed by the inspection after death, must have been accomplished during the first half hour, or even the first fifteen minutes after the acid was swallowed. This conclusion is established, *first*, by the sudden and well marked symptoms of collapse and extreme debility which had ensued, and in which he was found; *secondly*, by the circumstance of his never rallying from the state of collapse; *thirdly*, by the neutral state of the contents of the stomach discharging during life; and *fourthly*, by the appearances of the stomach, and especially its villous membrane after death.

These appearances were very characteristic as effects of the operation of a concentrated mineral acid on the animal tissues. The villous membrane was completely removed, most distinctly, indeed, over the pyloric end of the stomach, where the action of the acid was least direct, and consequently feeblest. In the anterior wall of the stomach, immediately below the cardiac aperture, the whole tissues of the stomach were, as it were, charred, and the blood in the vessels was coagulated and charred, as indicated by the black, elevated, hardened, and rough patches. On these parts the acid had acted first and most forcibly. It is difficult to say whether this was the result of the position which the man had taken shortly after swallowing the acid, namely, the right side, slightly inclined to the face, or of the acid in its descent into the stomach first touching this part in its most concentrated form. The portions to the left and to the right of this, though much and deeply charred, were less continuously so, the patches being more distinct and circumscribed, than at the anterior wall. The posterior wall was rather less charred, though it was embrowned and indurated in the same manner as the anterior portion.

3. The facts and considerations now mentioned will readily explain the sudden fatality of this case. Allowing that the acid was taken about ten minutes past nine, then the whole space intervening between that and the time of death was about three hours and a-half, certainly under four hours. This is not the shortest period occupied in the induction of death by swallowing sulphuric acid, though it is among the shortest. In one case recorded by Professor Remer of Breslaw, in Hufeland's Journal, death took place in the course of two hours. In the case of a boy of four years and ten months, recorded by Dr Martin Sinclair in the thirty-sixth volume of this Journal, (p. 102), to whom sulphuric acid was administered by his father-in-law, it appeared in evidence that the child was quite well at seven in the morning; that he was labouring under the symptoms of poisoning a little before eight; and as death took place about twelve, the interval between the administration and the fatal event was about four hours and a-half. In the case of Daniel Maclean the interval was shorter; and is intermediate between that observed in the case of Professor Remer and that observed in the case detailed by Dr Sinclair.

It is not easy to account for this rapidity in action either by the large quantity taken, or by the length of time which elapsed between the deglutition of the poison and the exhibition of antidotes. It is unfortunate that in very few cases are the two circumstances now mentioned accurately stated, and sometimes it is difficult to ascertain the exact amount taken. To illustrate these, however, and several other points, it may be useful to advert to the circumstances of several of the best recorded cases.

1. In one of the earliest cases recorded by Dr Bateman in the tenth volume of this Journal, a child, 2½ years old, swallowed by mistake from a phial, a small quantity, as is stated, of the strong sulphuric acid, that is, it was supposed, about a teaspoonful. In this case the child survived rather more than two days, the acid having been swallowed about half-past four in the afternoon, and death having taken place at nine in the evening of the second day, making the whole space about fifty-three hours. No mention is made of the administration of antacids.*

2. In the case of a female servant, aged 19, who attempted suicide by swallowing this acid in the concentrated state, and to whom, from her concealment of the fact, no antidotes were administered till midnight of the same day, no mention is made of the quantity swallowed. As, however, the symptoms were more those of gastric inflammation than collapse and sinking, as they were sensibly mitigated on the third day, and as the patient eventually recovered completely, there is reason to believe that the quantity was small, perhaps not more, and probably rather less, than two or three drachms.†

3. In other cases the amount swallowed is equally vaguely given. Thus in a case which occurred in the practice of Dupuytren, in which a young woman of 22 attempted suicide in this manner, it is merely said that she "swallowed a glass of sulphuric acid mixed with water."‡ No mention is made in this case of the use of antidotes, and the patient survived sixty days.

In the following case given by Lebidois, the quantity, but not the density of the acid attempted to be swallowed, is specified.

4. In the month of October 1826, a young woman, aged 22, strong, of brown complexion, and a passionate temperament, determined to swallow, in a moment of despair, three ounces of the sulphuric acid of commerce. Pain obliged her to reject the greater part of the dose, and, according to her account, only two or three spoonfuls reached the stomach. The act was followed by vomiting, convulsions, and cries, which attracted the neighbours, who endeavoured to make the patient drink cold water,—an endeavour which was impracticable, in consequence of the spasmodic constriction of the pharynx. In the evening, mucilaginous drinks, the use of milk, and the application of eight leeches over the neck were prescribed.

On the fourth day, she complained of lacerating pain deep along the course of the neck, and in the chest, from the throat to the site of the stomach,—aggravated by pressure, deglutition, cough, expectoration, speaking, and even the act of turning the head quickly. These symptoms, with vomiting whenever fluids were swallowed, epigastric pain, and rapidly advancing wasting, continued for several days, and death took place on the 7th of November, fifteen days after the poison had been swallowed.

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* Edinburgh Medical and Surgical Journal, Vol. x. p. 251.

† Horn's Archiv, 1825, May und Juni, p. 454.

‡ Clinique d'Hotel Dieu.

The œsophagus was so much softened that it was torn in the attempt to divide it. Its internal surface, from the guttural to the cardiac orifice, was of a cherry-red colour, and presented in the latter region irregular whitish slips or bands, evident marks of cicatrices already formed.

The mucous membrane of the stomach, from the cardia to the pylorus, along the large arch, was traversed with large deep-red patches, covered with mucus of a wine-red colour. In several parts the epidermis is said to have been removed. The reporter understands, perhaps, the mucous membrane only. It was covered with red granulations, and appeared suppurating. In other parts, whitish, tense bands, firm, and lying in different directions, indicated the formation of cicatrices.

The lungs were also found solid, reddish, and much congested with blood in their posterior region ; and the bronchial mucous membrane was of a deep-red colour, and covered with much puriform mucus.*

In this case the poison had proved fatal by inducing its secondary effects, or inflammatory reaction in the mucous membrane of the stomach.

5. In a case recorded by Carus, in which a pregnant female, nearly at the full period, poisoned herself by concentrated sulphuric acid, neither the quantity swallowed, nor the interval between deglutition and death is mentioned.†

6. In the case of Capper, recorded in this Journal by Dr Martin Sinclair, it is stated that three fluid ounces of concentrated sulphuric acid were swallowed ; that their introduction into the stomach was followed by excruciating pain, retching, and violent vomiting ; and that fifteen minutes after the acid was swallowed, when Dr Sinclair saw him, these symptoms were present in an aggravated form, the body of the patient being greatly bent with torture, and the retching and vomiting incessant. In this case, however, four ounces of prepared chalk diffused in a quart of milk, were swallowed in divided portions at short intervals ; and it was probably owing to this early employment of an antacid antidote, that the patient survived so large a dose the long period of fifty-five hours. ‡

7. In the second case detailed by Dr Sinclair, of the boy Morrabin, poisoned by his father-in-law, the quantity of acid is not specified at all.§

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* Empoisonnement par l'acide sulfurique, par le Docteur Lebidois, fils. Archives Generales, Tome xiii. p. 365. Paris, 1827.

† Gemeins Deutsche Zeitschrift fur Geburtskünde, Band ii. 1827.

‡ Edinburgh Medical and Surgical Journal, Vol. xxxvi. p. 99. Edin. 1831.

§ Ibid. p. 102. Edinburgh, 1831.

8. Dr Roupell has given, along with a very beautiful and accurate representation of the appearances presented by the stomach after death by this acid, a short notice of the case of a young boy of 2½ years who drank from a stone bottle a quantity of sulphuric acid, left inadvertently in a situation in which he had access to it. Carbonate of magnesia was immediately given, and afterwards Castile soap in solution; but though vomiting ensued, and acid matters with food, and then a large quantity of grumous blood, were rejected, no reaction took place; and death followed the same evening within twelve hours after the accident. In this case the quantity swallowed is not stated. But it is mentioned that, immediately after swallowing, the boy fell down on the floor, a circumstance which shows the suddenness of the action.*

9. In a case of suicidal poisoning ascertained by MM. Duvergie and Taufflieb, to have been accomplished by sulphuric acid, and in which the interval between the taking of the acid and death was forty-eight hours, no notice is taken of the quantity swallowed; and, indeed, from the manner in which the poison was taken, it was impossible to ascertain the quantity.†

10. Dr John Wilson, physician to the Middlesex Hospital, records the particulars of two interesting cases of poisoning by means of sulphuric acid. In the first of these cases, a woman swallowed, on the 3d of January 1834, it is stated, a part of twopenny worth of oil of vitriol. This she survived six months or twenty-six weeks in the first instance, and appeared to have recovered from the immediate effects of the injury. After rejecting a cylindrical shaped pseudo-membranous tube, which manifestly proceeded from the œsophagus, she made partial recovery and left the hospital with some degree of flesh and strength. She was readmitted, however, in the following September, rather emaciated and enfeebled; and after suffering from retching and vomiting for three days previously, she expired calmly on the 17th November, after having survived the swallowing of the sulphuric acid forty-five weeks and three days.

11. In the second case recorded by Dr Wilson, a young woman swallowed at 12 o'clock midnight, on the 2d January 1836, from two to three ounces of strong sulphuric acid, which remained in the stomach for a quarter of an hour, when she vomited a black ropy fluid. She was admitted into the Middlesex Hospital at ten next morning, unable to speak except in a whisper, unable to open the mouth, from which issued ropy mucus; with great tenderness from the pharynx down to the epigastrium; the pulse scarcely to be felt; the extremities cold, and ejection of every fluid as soon

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* Illustrations of the Effects of Poisons. By George Leith Roupell, M. D. London, 1833.

† Annales D' Hygiene. No. xxvi. T. vii. Paris, 1835.

as it was taken; while she frequently vomited a fluid of the consistence of treacle, and the colour of carbonate of iron. She died the same night at twelve, having survived the deglutition of the acid exactly twenty-four hours.*

In the latter case it is remarkable that life was continued so long after the time at which the acid was taken, considering the quantity swallowed. No mention is made of any antidotes having been employed; and from the period at which the acid was taken, it is likely that nothing could have been done for several hours.

Dr Wilson's first case is in many respects very valuable, but in none more than in showing how long, under certain circumstances, a person may survive so frightful an injury, and the state of the stomach that is left by the secondary effects of the poison. It is rare, indeed, that an individual survives so long as Dr Wilson's patient did; for either death speedily takes place, or recovery, more or less complete, ensues. I have met with only one case altogether similar, which fell under the observation of Dr Friz of Markgroningen.

12. A large strong man, aged 45 years, who spent a debauched life, and was much addicted to drunkenness, having eaten an abundant meal of boiled potatoes, at 11 o'clock in the forenoon, on the 1st of April 1837, drank shortly after, in a fit of *taedium vitæ*, at once, one ounce and a half of concentrated sulphuric acid. The violent burning in the gullet thence induced obliged him to confess his act, and to solicit assistance. The use of sweet milk, and afterwards of oil, was followed by copious vomiting, in which the potatoes were rejected of a black colour. When Dr Friz saw him about five hours after, the patient had taken some magnesia suspended in water, but refused to continue the use of the remedy, lay speechless, giving indications of intense burning in the œsophagus; had, on account of the great thirst, drank, notwithstanding the difficulty in swallowing, much beer, and appeared to have vomited with the potatoes a good deal of sulphuric acid. He took some subcarbonate of potass in solution every quarter of an hour. The complexion was at this time pale; the pulse incapable of being counted; and the face, at the angles of the mouth, and the parts touched by the vomited matters, presented deep impressions on the skin, as if from tight cords, but without excoriation or change in colour.

Next day, 2d of April, there were violent pains in the abdomen, and oil, yolk of eggs, and carbonate of magnesia, were given. On the 3d, the patient could speak a little, and complained of burning pain in the mouth and stomach, and colicky pains.

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* Medico-Chirurgical Transactions, Vol. xxi. p. 272. London, 1838.

From this time onward to the 3d and 5th of May, or for a whole month, the case presented symptoms of inflammation of the mouth, throat, œsophagus, and stomach; and these were opposed or alleviated by various measures. The most constant symptom appears to have been difficulty in swallowing, pain in attempting it, and indication of constriction of the œsophagus. Under the use of remedies, he was so much improved in the month of July, that the patient believed the use of medicine no longer necessary. In August, symptoms of obstruction of the œsophagus again appeared, and increased towards the end of the month, with emaciation and hectic fever; and death took place on the 30th of September.

Dissection disclosed various lesions. The lungs were occupied by tubercles, and the pleuræ adhered. The stomach contained some yellowish fluid; and the villous membrane was only a little inflamed, not destroyed. The œsophagus was in the middle remarkably contracted for the space of half an inch, and on its posterior part presented an opening half an inch long into a blind sac.*

In this case, the interval amounted to the long space of 182 days or 26 weeks exactly, being the same time as the first period during which the patient of Dr Wilson survived.

In this case it is scarcely possible to doubt that the principal reason why the patient survived so long was, that less injury was done to the stomach than usual; and that the reason of this was, that the acid was swallowed when the stomach had been previously filled with alimentary articles, which assuredly prevented the acid from acting so energetically on the gastric tissues as it would otherwise have done.

Dr Ebers of Breslau again details two cases in which, after sulphuric acid was taken in some quantity, the patients recovered.

13. In the first case, a young woman of 22, swallowed on the 7th November 1836, a tablespoonful of oil of vitriol. The usual symptoms ensued, followed by shivering and the symptoms of inflammation of the stomach. To subdue these, blood was drawn from the arm, leeches were applied to the epigastric region and neck, subcarbonate of potass was administered, and oleaginous emulsions were given; on the third day sensible relief ensued; and the patient left the hospital well on the 1st of December.†

14. In another case by the same author, a woman of 29 swallowed a quantity of sulphuric acid which could not be ascertained; and was immediately conveyed to the hospital. The act was followed by agitation, violent fever, and vomiting of bloody and blackish mucous matters. For these symptoms the solution of subcar-

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* Medizinisches Correspondenzblatt des Wurtembergischen Arztlichen Vereins. Jahrgang, 1838. Band viii. No. 27.

† Rust's Magazin, Band l. Heft iii. 1837.

bonate of potass was prescribed and continued for four days with great and marked alleviation; and ten days after, on the 24th of July, the patient left the hospital quite recovered.*

Dr Michaelsen of Meldorf, in South Dithmarsch, records in Pfaff's Practical and Critical Communications, two cases of this accident which occurred in his practice in the year 1837.

15. In the first case, a young woman, who was dismissed from service for some petty theft, took it so much to heart that she resolved to destroy herself; and with this intention, drank from a small phial on the 9th of July, a quantity of the glacial vitriol of Nordhausen. The quantity was not easily ascertained; but Dr Michaelsen conjectures that it was probably half an ounce. Her father, who suspected some evil, poured milk down her throat, but, as no improvement followed, he called a physician next day. The fact was concealed for two days; and on the third the physician discovered the truth. Mucilaginous and oily remedies were exhibited; but much pain was felt in the epigastric region and belly in general. On the morning of the 14th day she had spent a bad night with abdominal pain; at three in the afternoon the slightest touch could not be borne; the face was hippocratic; and the whole surface covered with cold clammy sweat. Leeches and other means produced no alleviation; and three hours after, viz. six in the evening, the patient expired. It is here not very clearly stated whether this catastrophe took place on the 14th day of July, the fifth after taking the acid, or on the fourteenth day after taking the acid.

On inspecting the body the most important circumstances disclosed were the following. A quantity of offensive gas issued from the abdomen; and the peritoneal cavity contained fluid so acrid as to smart the fingers, and corrode the instruments used in dissection. The stomach, which contained a thickish brown fluid, was everywhere corroded and perforated, and so putrid in its coats that it gave way and tore on the slightest touching. The omentum and the ileum were also softened and lacerated in patches; the colon in a less degree. The liver, spleen, and kidneys were in appearance natural. The uterus was in its virgin state.

The contents of the stomach, and the organ itself subjected to chemical experiment, showed that it contained sulphuric acid.

In this case, though the quantity swallowed was not large, yet the long time during which the acid in its concentrated state was allowed to act on the stomach, must have amply compensated in the effects produced or the deficiency in quantity. It is unfortunate that it is not distinctly stated whether the patient died on the 14th day of the month, that is, the fifth day after swallowing the acid, or on the fourteenth day after the acid was swallowed.

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* Rust's Magazin, Band I. Heft. iii. 1837.

I am inclined to think from the account of the case, that death took place on the fifth day.*

16. In the second case which occurred to Dr Michaelsen, a married woman, the wife of a prosperous merchant, who was accused of having stolen certain articles of dress, and was in consequence threatened with a judicial examination, and had also been reproached by her husband, swallowed, with the intention of self-destruction, about 11 o'clock forenoon, on the 6th September 1837, about one ounce of concentrated sulphuric acid, but concealed what she did till evening, when it was first understood after a physician had been summoned, by her having repeated offensive tar-like stools. She was seen in bed at eight in the evening, nine hours after swallowing the acid; and presented the usual symptoms; the face and limbs cold, the lips, tongue, palate, and gums white, as if scorched; speech scarcely perceptible, and the pulse small and hard but not frequent. She complained of pain in the back, and a sense of heavy uneasiness in the epigastric region, and could not swallow. She was ordered three drachms of potass in water, decoction of salep with prepared oyster shells, (carbonate of lime,) and oat-gruel with calcined magnesia suspended in it for drink. Next day, when the surface was warm, leeches were applied over the throat, poultices of linseed and henbane over the belly; an enema of olive oil and milk was administered; and internally oily emulsions were given. At twelve at noon the patient could neither speak nor swallow; at one she had the aspect of speedy death; and at two she was lifeless. The interval was in this case twenty-seven hours.

The mouth with its soft parts, the pharynx and œsophagus, were stripped of their epidermis, of a whitish-gray colour, and mortified, and the teeth were eroded. Upon opening the chest, which discharged a large quantity of very offensive gas, the lungs appeared compressed by the diaphragm, turgid, with black semifluid blood, of a black-gray colour, and mortified in certain places; the heart flaccid and soft, distended with air, filled with blood partly coagulated, partly semifluid.

In the cavity of the abdomen, from which also much fetid gas was emitted, the stomach and duodenum appeared partially mortified; the jejunum, in its whole extent, marked with inflammatory redness, but not mortified; and the ileum and the colon in the natural state. The liver was unusually empty of blood, and somewhat degenerated. The urinary bladder and kidneys were sound. The blood-vessels of the abdomen were almost all empty; the peritoneum not reddened, and the uterus converted into a scirrhous mass, without trace of cavity or orifice. No trace of sulphuric acid was discovered in the stomach and course of the intestinal canal on chemical examination.*

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* C. H. Pfaff's Practische und Critische Mittheilungen aus dem Gebiete der Medizin, Chirurgie und Pharmacie, redigirt von Dr J. Samson, in Altona. Neue Folge. Vierten Jahrgangs, 9 Heft. S. 64, 78.

Dr Michaelsen thinks it important to observe, that in the first case, the sulphuric acid was drunk from a medicine phial with a long narrow neck, so that the cavity of the mouth was less affected, but more must have reached the stomach; whereas in the second case, according to the nature of the vessel employed, the opposite state might take place.

Amidst so many fatal consequences from the deglutition of small quantities of sulphuric acid, it is interesting, if not extraordinary, to perceive a case of recovery after the deglutition of two ounces. Of this an example occurred to Dr Beeskow in Drossen.

17. A young woman of 18, took on the 22d November 1837, about two ounces of concentrated sulphuric acid in order to poison herself. The usual symptoms ensued. The treatment consisted in the exhibition of milk and oil in abundance, the application of leeches, sinapisms, and afterwards the administration of calcined magnesia, and to counteract constipation, castor oil and Epsom salts. After eighteen days, the patient was completely restored, and remained so, without *sequelæ* or deformity, excepting a small scar on the lower lip. †

18. Dr Lowenhardt of Prenzlau met with the following case of suicidal poisoning in 1833. A man, aged 53, who had been labouring under symptoms of obstruction of the portal system, and indigestion, in a fit of hypochondriacal gloom, early on the 17th of August, drank out a small bottlefull of concentrated sulphuric acid, which, however, he instantly repented, and speedily sent for Dr Lowenhardt. The latter found the tongue greatly swelled and covered with a white shrivelled membrane, and the mucous membrane of the mouth in the same state; yet the patient was capable of swallowing moderately well. He complained of violent pains in the throat, in the œsophagus, and in the stomach ; and violent hiccup and vomiting were combined with cold extremities, &c. Alkaline solutions, milk, and mucilaginous remedies were administered ; but everything was rejected. General blood-letting and bleeding by leeches were equally unavailing; and the patient expired at half-past two in the afternoon, with all the symptoms of most acute gastric inflammation.

Dissection disclosed the marks of inflammation of the epiglottis, inflammation and gangrene of the œsophagus and stomach ; and slighter marks of lesion in the small intestines.

In this case, the exact hour at which the acid was swallowed, is not specified; and it is merely stated that it was taken early in the day; nor is the quantity mentioned, or even attempted to be estimated. The interval between poisoning and death was probably not more than seven or eight hours.

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* C. H. Pfaff's Practische und Critische Mittheilungen, u. s. w.

† Medizinische Zeitung-Herausgegeben von dem Verein fur Heilkunde in Preussen, 1838. No. 43.

19. In another case by the same author, a robust dyer, addicted to intoxication, drank on the 11th of October 1836, by mistake from a bottle, some concentrated sulphuric acid, which he instantly spat out. He took at the same time, much solution of soap with milk and cold water; but, notwithstanding the use of these means, the interior of the mouth was almost everywhere swelled and partially stripped of its mucous membrane; and so violent were the marks of reaction that general blood-letting, and afterwards local bleeding by leeches were prescribed for the violent inflammation in the throat. Two days after, on the 13th, the patient was better, and fever much alleviated; and he complained merely of the mouth and throat, for which leeches were again applied. On the 21st, the tongue was found adherent to the lower jaw, and the velum to the tonsils. The fauces appeared to be still movable, but the patient complained of difficulty in swallowing solids. This was ascertained to depend on inflammatory thickening and contraction of the œsophagus, which increased, as the patient refused to have the elastic tube daily introduced into the œsophagus. The patient endeavoured to obviate this annoyance by the use of brandy, and thereby brought on *delirium tremens* in the summer of 1837.*

These cases, which constitute the greater number of those recorded, I mention to show not only how vaguely often the quantity of acid taken, and the interval between its introduction into the stomach and death, are mentioned, but also to show how different are the effects of the acid in different circumstances.

Some importance it seems reasonable to attach to the circumstance of the acid being taken when the stomach is either empty or nearly empty. Dr Sinclair states, that in the case of the patient John Capper, the acid was taken while the stomach was void of solid food. In the case of Daniel Maclean, it was swallowed previous to his having taken breakfast, and consequently when the stomach was as nearly as may be empty. In all the other cases, excepting that by Dr Friz, the circumstance is not noticed. But from the circumstances under which the acid was taken, and the period of the day at which it was swallowed, there is reason to believe that more or less food was contained in the stomach at the time. It is not improbable that this may account in some degree for the great disparity in the effects produced in different cases.

From the comparative view now given of the facts afforded by these cases, which may be regarded as the most suitable for the purpose, it seems to result as a natural conclusion, that the degree of speed, with which sulphuric acid destroys, depends on the three circumstances of the quantity taken, the interval allowed to elapse before antidotes are used, and the circumstance of the stomach containing solid food or not, which might be interposed between the acid and the villous membrane of the stomach, and thus enfeeble, or at least retard the violence of its action.

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* Medizinische Zeitung. Herausgegeben von dem Verein fur Heilkunde in Preussen, viii. Jahrgang, 1839. No. 8.

The appearances presented by the parts touched by the acid, as well as by those not touched by it, show that it induces a most complicated sort of lesion. The charring of the different tissues of the stomach, and especially of the blood in the blood-vessels nearest the action of the acid, and the coagulation of that blood, is perhaps the primary and most essential lesion. At the same time, other lesions not less pernicious and destructive take place.

The acid seems to be a very short time in the stomach when it not only chars the villous membrane of that organ, but is absorbed or transudes through the textures, and affects the serous membranes, all of which give proofs more or less distinct of acid reaction. Thus, in the case recorded in this paper, the peritoneum and the fluid contained in it gave instantly to litmus-paper decided marks of acid reaction; and in a less marked degree the thoracic serous membranes gave proofs of the same condition. It is to be observed, that the fluid discharged from the stomach during life was quite neutral; and it must accordingly be inferred that the acid had exuded, or transuded, or been conveyed to the serous membranes during life. If this conclusion be admitted as legitimate, it is very probable that the speedy and great degree of collapse, often so great as to be irrecoverable, is the result of the acid affecting the surface of the serous membranes. This conclusion seems so much more natural, when the general fact of the speedy action of poisons applied to any of the serous membranes is remembered, and when the violent and well-marked lesion of the constitution, in consequence of sudden injurious impressions on any of these membranes, is kept in view.

Besides the lesion now mentioned, there is another which deserves especial attention, not only for its influence on the manner and certainty of the fatal event; but from the peculiar part which it performs among the symptoms during life. The effect of the acid on the mucous epidermis of the œsophagus has been observed by all who have witnessed the appearances left after death by this poison. Though its application to the membrane can be almost only instantaneous, yet its action is conspicuous and intense. It renders the epidermis quite opaque, shrivelled, or contracted into folds, and detaches it from the subjacent mucous corion. The epidermis is then rendered so much more distinct, that its exact termination at the caris not specified; and it is merely stated that it was taken early in the day; nor is the quantity mentioned, or even attempted to be estimated. The interval between poisoning and death was probably not more than seven or eight hours.

19. In another case by the same author, a robust dyer, addicted to intoxication, drank on the 11th of October 1836, by mistake from a bottle, some concentrated sulphuric acid, which he instantly spat out. He took at the same time, much solution of soap with milk and cold water; but, notwithstanding the use of these means, the interior of the mouth was almost everywhere swelled and partially stripped of its mucous membrane; and so violent were the marks of reaction that general blood-letting, and afterwards local bleeding by leeches were prescribed for the violent inflammation in the throat. Two days after, on the 13th, the patient was better, and fever much alleviated; and he complained merely of the mouth and throat, for which leeches were again applied. On the 21st, the tongue was found adherent to the lower jaw, and the velum to the tonsils. The fauces appeared to be still movable, but the patient complained of difficulty in swallowing solids. This was ascertained to depend on inflammatory thickening and contraction of the œsophagus, which increased, as the patient refused to have the elastic tube daily introduced into the œsophagus. The patient endeavoured to obviate this annoyance by the use of brandy, and thereby brought on *delirium tremens* in the summer of 1837.*

These cases, which constitute the greater number of those recorded, I mention to show not only how vaguely often the quantity of acid taken, and the interval between its introduction into the stomach and death, are mentioned, but also to show how different are the effects of the acid in different circumstances.

Some importance it seems reasonable to attach to the circumstance of the acid being taken when the stomach is either empty or nearly empty. Dr Sinclair states, that in the case of the patient John Capper, the acid was taken while the stomach was void of solid food. In the case of Daniel Maclean, it was swallowed previous to his having taken breakfast, and consequently when the stomach was as nearly as may be empty. In all the other cases, excepting that by Dr Friz, the circumstance is not noticed. But from the circumstances under which the acid was taken, and the period of the day at which it was swallowed, there is reason to believe that more or less food was contained in the stomach at the time. It is not improbable that this may account in some degree for the great disparity in the effects produced in different cases.

From the comparative view now given of the facts afforded by these cases, which may be regarded as the most suitable for the purpose, it seems to result as a natural conclusion, that the degree of speed, with which sulphuric acid destroys, depends on the three circumstances of the quantity taken, the interval allowed to elapse before antidotes are used, and the circumstance of the stomach containing solid food or not, which might be interposed between the acid and the villous membrane of the stomach, and thus enfeeble, or at least retard the violence of its action.

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* Medizinische Zeitung. Herausgegeben von dem Verein fur Heilkunde in Preussen, viii. Jahrgang, 1839. No. 8.

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In the foregoing review of cases of poisoning by swallowing sulphuric acid, it is remarkable how rare an occurrence is corrosion of the stomach, and solution and perforation of its tissues. The case in which it was most distinctly observed, is that detailed in the preceding paper by Mr Watson, in which the whole of the lower portion of the organ was dissolved and hanging in loose shreds, so as to leave a large aperture communicating with the peritoneal cavity. In one other case only did any approach to this state take place, viz. that of the young woman seen by Dr Michaelsen of Meldorf; and in whom this corrosion and softness of the gastric tissues seemed to be the result of the long time, viz. two days, during which the true nature of the accident was concealed.

Of all the other cases the general result is to show, that the deglutition of sulphuric acid, in any considerable quantity, is followed by two kinds of symptoms. The first are those of the immediate effects of the introduction of the acid into the stomach. These are, deadly weakness, coldness of the surface, weakness and tenuity of the pulse, laborious but very feeble respiration, loss of voice, amounting to aphonia, and even insensibility and unconsciousness. Vomiting may or may not take place. These symptoms may continue two, three, four, or even eight hours, and terminate fatally without the slightest marks of reaction, as it is named. From the facts furnished by all the cases of this kind, and the appearances found in the dead body, it is impossible to doubt that these symptoms are the result of the immediate injurious operation of the acid on the villous membrane of the stomach, its blood-vessels, and also on the peritonæum.

When this action is not sufficiently violent and intense to induce death, it is followed, after a period variable in different cases, by symptoms of reaction. The surface and extremities become warm; the pulse becomes fuller and frequent; the patient complains of pain in the epigastric region, and sometimes over the whole abdomen, which is aggravated by pressure; pain also in the neck, and often along the whole course of the œsophagus; difficult deglutition; vomiting; hiccup; hoarseness and difficult breathing; in short, all the symptoms of inflammation of the throat, larynx, œsophagus and stomach. If these symptoms are not very intense, and if they are promptly subdued, recovery takes place; but if they be violent, or if they be neglected, the inflammation, suppuration, and ulceration of the œsophagus and stomach, prove fatal by their influence on deglutition and digestion, by preventing nutrition, and thereby undermining the general strength.

Regarding the treatment of this accident, it should be accommodated to the two orders of symptoms now mentioned.

Immediately after the acid is swallowed chemical considerations suggest the instant use of antacids, as the alkalies and alkaline earths; and in general this practice has been adopted. In the case detailed above, it was employed freely by means of magnesia and chalk. The latter has been recommended, on the ground that it has a stronger affinity for sulphuric acid than magnesia, and because, being more easily miscible with liquids, it can be administered in greater quantity in a shorter time. At the same time magnesia presents such facility of union with the acid, and is so convenient in forming a soluble salt, that it seems here entitled to preference. Carbonate of soda also is a very excellent antacid, and whenever accessible ought to be given. Foreign physicians are much in the habit of prescribing carbonate or subcarbonate of potash; and that also is entitled to attention preferably to chalk. Upon the same principle, solutions of soap have been employed; but they must always act with less power than either magnesia or either of the alkaline carbonates.

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But, however plausible be the doctrine which recommends the immediate use of the antacid or saturating alkalies and earths, it may be doubted whether they are very efficacious in preventing or stopping the destructive action of the sulphuric acid. The action of this acid upon animal matters is so immediate, and its energy in developing their carbonaceous matter is so powerful, that, in the majority of cases, the destruction of the parts touched is completed. The only means of obviating or enfeebling this action upon the stomach is, by substituting other articles upon which the acid may perform the same action which it does, and must inevitably do, upon the stomach. It is an important fact well deserving attention, that most of the means recommended and employed to neutralize the acid do not appear to obviate or prevent its destructive effects; and, conversely, in a number of cases in which either other substances were present in the stomach at the time, or were speedily introduced, less destruction has been perpetrated than where the alkaline earths or mineral bases have been used. Thus, in several of the cases, in which milk has been copiously exhibited soon after the deglutition of the acid, the patient survived the immediate operation of the acid, reaction took place, and either death was the result of the secondary inflammatory action, or recovery ensued.

These facts and considerations would lead to the conclusion, that the best method of treating the immediate symptoms of poisoning by the exhibition of sulphuric acid, consists in the administration of milk, containing large quantities of magnesia, or the carbonate of soda or potass, and the liberal use of mucilaginous drinks, with gruel, and the vegetable decoctions. If the patient survive this stage, and if symptoms of pharyngeal, laryngeal, œsophageal, or gastric, or peritoneal inflammation ensue, the next best remedies are, blood-letting from the system, local bleeding from the neck and the epigastric region, by means of leeches, the use of opiates pretty freely, the use of mucilaginous fluids and milk, and counter irritation by means of blisters, sinapisms, and the rubefacients, and epispastics over the epigastric and umbilical region.

The bowels should be kept open, not by medicines administered by the mouth, but by enemata.

I cannot conclude this notice without saying that I am much indebted to my clerk, Dr Roberts, for his judgment and promptitude in administering the means of relief.

20. Since concluding the foregoing remarks, I have received from Dr Patrick Newbigging, the gentleman who was called to Maclean, the following account of a case in which a young child was poisoned by sulphuric acid, survived the primary effects, and died of the secondary consequences.

"I was summoned, on the morning of the 18th of March 1838, to see a female child, aged 17 months, who had swallowed some sulphuric acid used for cleaning brass.

She appeared to be in great suffering, the mouth being open, and the tongue projecting. I administered some carbonate of magnesia in milk, of which she drank freely, causing much eructation, and followed with relief, and, in about an hour from the time she had swallowed the acid, she fell asleep.

She had vomiting of a dark-coloured fluid in the evening, with some return of uneasiness in the epigastrium. A desert-spoonful of castor oil was administered, with four drops of the solution of morphia. On the 19th, I found she had passed a good night, but on awaking she complained of pain in the region of the stomach, occurring in paroxysms, with much tenderness on pressure over that part. The pulse was 130; the tongue coated. The discharges from the bowels were of a dark colour. A couple of leeches were applied to the epigastrium, and some oil was administered. On the following day (20th) she was quite free from pain, and was moving about the house. The bowels were open, and the discharges were of a dark colour.

After giving some suggestions in regard to diet and general management, I left her in charge of her own medical friend.

I was requested to visit her on the 28th, and found her collapsed; the pulse scarcely to be felt; the eyes sunk; the pupils dilated; and almost insensible to light. I learnt that, in consequence of the improvement which had gone on since the 20th, the friends had been induced to give her soups, and other stimulant diet, which was followed with gastric pain, vomiting, and the usual symptoms of mucous inflammation.

She died early on the morning of the 29th.

I regret that the friends could not be prevailed upon to grant an examination of the body."

Art. XII.—*Case of Spontaneous or Idiopathic Emphysema.* By James Mouat, M. D. 13th Light Dragoons, Madras Service.

The evolution or secretion of air from the blood into the cellular tissue is a very rare phenomenon. Indeed, so few cases are there detailed by medical authors, that I am induced to record a recent instance of spontaneous or intrinsic emphysema occurring in India.

Private William Preston, H. M. 13th Light Dragoons, aged 32½, in India seven years, a tailor by trade, dark hair, spare make, swarthy but healthy, was in hospital with symptoms of *dysenteria ac.* 4th July and 14th August; and *hepatitis acuta*, 17th August 1837; since which period he has been at his duty, and working in the tailor's shop till the evening of the 9th June 1839, when he was admitted with pain and oppression in chest, and slight cough, attended by severe headach; heat of skin, succeeded at times by cold chills; much thirst; pulse quick and hard; tongue foul and loaded; bowels regular. He had been ill two days previous to admission, and can assign no cause for his ailment.

He was immediately bled to thirty ounces, and suitably treated with purgatives, the *Solut. Antimon. Tartarizat.* &c. with scarcely any relief. There being considerable fever the following morning, the blood-letting was repeated to twenty ounces. In the evening he still complained of much pain in the chest, with some dyspnœa, and quick respiration; pulse 100; much thirst. The bowels had been freely evacuated. Thirty leeches were now applied to the seat of pain, and the saline remedies persevered in with so much relief that he had no cough or accession of fever. The pulse became soft and regular at 80; tongue foul and loaded. On the 12th, half-past six A. M. reported better; no fever; slight cough, no expectoration; tongue foul; no stool; but seems getting better. Was seen by Mr Parrock at the visit, who especially noticed this patient. 10 A. M. For the first time, has complained of severe shooting pain all over the right thigh, particularly towards the groin, where there is slight swelling, with much heat of the parts. The vessels of the thigh appear natural and soft; states he first perceived this pain, rather suddenly, about half an hour ago, before which he was quite easy; pulse quick; skin warm; tongue clean; bowels open twice; appears rather anxious. Twelve leeches were applied to the parts affected, followed by fomentations. 12 Noon. Leeches have just come off, and states he feels somewhat relieved; not so restless; vessels of thigh natural, but hot; distension in groin the same; pulse quick; skin warm; appears anxious.—The fomentations were continued.

Half-past 2 P. M. Has become suddenly much worse; looks anxious, and nearly of a leaden hue; quick convulsive respiration, deep and almost stertorous; great oppression at precordia and about the heart; also feeling of pain all over him, and particularly of right thigh, which is now much swollen and distended, from the hip to the knee; hard, tense, and somewhat discoloured above, but softer and elastic, and crepitating towards the knee; starts in bed at times; pulse-quick and irregular, 120; chest sounds well, and the stethoscope reveals a curious gurgling kind of *bruit de soufflet*; but the respiratory murmur is natural, and there is no abnormal sound about the limb; pulse at groin vibrating or bounding, and no pulse in the ham. One long incision was made outside the thigh, and another near the knee, about one inch in length, which gave vent to a reddish serosity with bubbles of air.

℞ *Æther. Sulph.* ʒss. *Tinct. Opii*, m. xx. *Mist. Camphor.* ℥i. *M. stat. sum. et repet. om. sem. hor.—Frictio.*

3 P. M. Little or no hemorrhage from incisions, but a great

deal of air escapes in bubbles, with some sanious fluid. This relieved him a little, but the restlessness continues, with short quick respiration, and he is becoming weaker and weaker, and more oppressed, and the limb more swollen, painful, and distended, and on pressure much air escapes from the incisions.—*Cont. remedia.*

Half-past 3 P. M. Pulse weaker, and a fainting sensation at times; some relief from the draught; limb the same; seems worse; more anxiety; and great distress of countenance.—*Cont. remed.*

Quarter to 4 P. M. Sinking fast; cold clammy sweats; respiration more laborious; pulse nearly gone; still air in bubbles come away from the incisions.—*Cont. remed.*

Died five minutes to 4 P. M.

Sectio Cadaveris one hour and a-quarter after death, in the presence of Messrs Smith, Kennedy, Coledridge, and Parrock.

Head.—On removing the *dura* and *pia mater* about six ounces of serous fluid escaped; a few bubbles of air were observed on the surface of the *pia mater.* The brain was softer than natural; about three drachms of pale serous fluid were contained in each lateral ventricle.

Thorax.—Left lung collapsed; the right lung had old adhesions to *pleura costalis*, and both lungs appeared healthy. About two ounces of serous fluid were contained in pericardium, and some air bubbles, like vesicles, on its surface. The heart was pale, flabby, and collapsed, with several small bubbles of air on its upper surface, the size of millet-seed. The heart was carefully removed, and the vessels compressed, in order to exclude the external air, and immersed in water, when some air rose to the surface from the right side. This viscus was found nearly empty, and contained sufficient blood only to tinge the fluid of a light red colour.

Abdomen.—Liver rather larger than natural, more brittle in texture, and of a pale dram-drinking appearance. Great hypertrophy of the spleen, which had increased to nearly twice its natural size, and was of a dark purple colour. A few ulcerated spots were observed in the large intestines. The mesenteric glands were enlarged. The other viscera were healthy.

The *right thigh* was much enlarged, hard, distended, shining, and somewhat discoloured; when punctured giving out much gas. On turning back the skin and fasciæ, the muscles were seen of a dark purple colour, commencing about the origin, and extending halfway down the thigh, and when incisions were made into them, a quantity of air and fluid blood escaped. The blood and air seemed to be pretty equally diffused throughout the whole tissues of the muscles, appearing like clotted blood, giving a crepitating feel like lung, but appeared to be more abundant in the extensor and abductor muscles. The Sartorius muscle free from disease, but much swollen. The blood-vessels were healthy. The femoral artery and vein, with their large branches, were carefully dissected. The cellular tissue of the large blood-vessels was infiltrated with dark blood, and bubbles of air accompanying the vessels under Poupart's ligament to the fore part of the thigh. The femoral vein contained some air; all the other vessels containing merely fluid blood. Much air issued, with frothy sanious fluid, when cut into and exposed. It appeared to have transuded and given out the air or gas.

The remarkable features of this case during life were its sudden and unaccountable appearance; the rapid sinking and great distress in the course of its brief career; the sudden swelling, and crepitating feel of the limb; the issue of bubbles of air, with a watery serosity, when the distended parts were incised; the leaden hue and great anxiety of countenance, &c. The important circumstances disclosed by dissection were bubbles of air on the surface of the *pia mater*; the softening of the brain; air bubbles like vesicles on the pericardium; the heart pale, flabby, and collapsed, with air globules on its surface, and air contained in the right side of the heart; the enlargement of the diseased limb giving out gas when punctured; the dark purple colour of the muscles also containing air and fluid, and its diffusion through the connecting tissues of the muscles, giving them the appearance of hepatized lung, as well as crepitating; the cellular tissue of the large vessels infiltrated with dark fluid blood, and vesicles of air; the femoral vein containing gas, but the other veins, fluid blood, and their tissues, a frothy sanious fluid, which appeared to have transuded, and given out air or gas. The femoral vein and diseased muscles were removed, washed, and then put into water. When examined twelve hours after, they were increased in bulk, and covered with bubbles of air, and still gave the crepitating feel of lung. The small quantity of air preserved, a part had a light put to it without any very evident apparent result; the other portion with lime-water indicated carbonic acid gas.

Did the extrication of gas arise from secretion or spontaneous evolution? or from partial decomposition and alteration of the circulating fluid? Its local origin, and total unconnection with respiration, and altered state of the blood, as if deprived of its vitality, would countenance the latter supposition, arising, perhaps, from this morbid state of the vascular action, connected with depressed vital powers, giving rise to its apparent secretion, and, had the patient lived long enough, might have become a case of humid gangrene. The blood had lost its property of coagulating, giving rise probably to its tendency of extricating gas, as it seemed to transude with bubbles of air, which continued even after dissolution.

The immediate cause of death may have arisen from air getting into the circulation, as the heart was pale, flaccid, and flabby, and had air in its right cavities.

Bangalore, East Indies, June 1839.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Medico-Chirurgical Transactions, published by the Royal Medical and Chirurgical Society of London.* Volume xxii. being the 4th volume of the 2d Series. 8vo. London, 1839.

We have much pleasure in giving early attention to the annual call, which we are happy to see that the respectable association, whose volume is now before us, continues to make upon our services; and we shall consider the papers in the order of the subjects of which they treat, beginning with those on Practical Medicine and Surgery.

The first communication on the former series is entitled *Notices of the Effects of Lead upon the System;* by James Alderson, M. A. and M. D., Physician to the Hull General Infirmary. In two cases, which came under the author's care, of young women employed in lead-works, of the respective ages of 25 and 18, who were affected with paralysis, the one, both in the upper and lower extremities, the other in the hands only, there was the singular anomaly of complete loss of vision, which followed closely on the paralytic symptoms. After the ineffectual use of ordinary remedies, the author was successful in restoring vision, by the additional measure of bandaging up the eyes, day and night, for several weeks, so as entirely to exclude light. This plan he adopted from a supposed analogy with the successful employment of splints, in cases of loss of power of the extensors of the wrist and arms.

"The action of light," he observes, "is the proper stimulus of the retina, and its continued action whilst the nervous expansion is paralyzed, is precisely similar to the continued extension of the extensor muscles of the arm and hand; as in this latter case, relieving the muscles from their continued extension by means of splints, has been found to restore their suspended power, so it was, by analogy, to be supposed, that by removing the stimulus of light altogether from the eye, the power of vision would probably be regained."—P. 83.

The author offers some general remarks on the treatment of the various affections arising from the poison of lead on the system; and gives the case of a family in which that poison was introduced through the internal use of rain water, lodged in a leaden cistern, which was found to have varying quantities of lead in it, according as it had been recently disturbed, or long quiescent. The water, we are informed, was always filtered before use; but in this state it was sweetish, and afforded distinct evidence of the presence of lead. By other experiments, however, it is to be inferred, that filtration will deprive water of nearly all the lead contained in it, and exhibit that substance separately in the filter.

The author seems to us to underrate very much the importance of opium in *colica pictonum*, and to carry his analogical reasoning rather too far, when he attributes that severe complaint to paralysis of portions of the intestine. If the paralysis which is found to be produced in some particular muscles of the body, by the poison of lead, were always, or even occasionally attended with severe pain in the parts affected, there might thus be some degree of support afforded to the author's reasoning, which we would submit that it does not otherwise possess.

The next medical communication contains *Notices of the Occurrences at the Small-pox Hospital, London, during the year* 1838; by George Gregory, M. D., Physician to the Small-pox Hospital. The total number of persons admitted with small-pox in some of its forms was 695, of which 187 died, or 27 per cent., which is about 1 in 3⅔ds. Of the unvaccinated there died at the rate of 40 per cent., or 1 in 2½, which is in the same ratio as the deaths from small-pox in 1781. Of the unvaccinated, 8 per cent. died, or 1 in 12½; and the severity of the disease increased materially with age.

Much difficulty occurred in forming a correct conclusion, both in respect to such as had been, or had not been previously vaccinated. In the former cases, the cicatrix was the chief guide; but it was not always a sure one; while the highly modified character of the disease in many of the latter afforded strong presumption of occasional prior vaccination. The principal results are given in a tabular form.

The next communication gives *a Statistical Account of Cholera in the Seamen's Hospital in* 1832; by George Budd, M. B., F. R. S., Physician to the Seamen's Hospital. In our account of the 21st volume of the Medico-Chirurgical Transactions, we had occasion to notice some interesting histories and dissections of several cases of cholera, by the author of this communication and his colleague, Mr Bush. In the present paper, Dr

Budd gives some general deductions in reference to the statistics of that disease, of which we shall give a general abstract.

With regard to the mortality which occurred at different periods of this epidemic, the number of admissions increased during the months of June, July, and August; and the average mortality was 93 cases in 160, which is 58½ per cent., or 1 death to 1.72 cases. At first, the number of deaths was double the recoveries; but towards the end of the epidemic, about half the number only. In the Echo cholera vessel, however, such disparity did not occur.

Mortality was much influenced by age; being least in persons between the ages of 15 and 30, and greatest in those above 50. Of 13, whose ages exceeded 53, not one recovered. Liability to the complaint was least between the ages of 20 and 30, but it increased much with advancing life, just as has been found by M. Grisolle to be the case with susceptibility to the poison of lead. Deranged health he likewise found to be unfavourable to recovery; for the proportional mortality was greater in persons affected with cholera, who belonged to the hospital ship the Dreadnought, than in those who were previously healthy. Much diversity occurred in the proportional diffusion of the disease in different epidemics; and in the Donor, which was fitted up precisely as a cholera ship, not one of the medical gentlemen or nurses took the complaint; though one of the former, and three of the latter lived on board, and many examinations were continually conducted there, and in very ill ventilated cabins. The author, indeed, states the very satisfactory fact, that not a single death occurred among the medical officers of the Dreadnought, or of the cholera hospitals connected with it, during the whole existence of that disease in London.

The last of the medical papers contains *Cases of Measles, occurring oftener than once in the same individuals*; by John Webster, M. D., Consulting Physician to the St George's and St James's Dispensary. In the first of these cases, the author attended the patient in a regular attack of measles when 2 years old; and again about two years afterwards. In the second the patient, a young lady of 15, had measles regularly under the author's care, but was reported, on evidence which he had not the smallest reason to doubt, to have had the disease twice before; the first time, at Madras, when 4 years of age, and the second at Blois, six years afterwards.

Another instance of a similar kind is mentioned by the author on the authority of Dr Forbes of Argyle Street.

The first of the Surgical papers is a *Case of Malignant Disease*,

occupying one-half of the Tongue, in which a Ligature was applied from beneath the Jaw; by James M. Arnott, Surgeon to the Middlesex Hospital. The subject of this very creditable operation (which was suggested by one performed by M. Jules Cloquet, and M. Mirault respectively, in two cases of cancer of the tongue,) was a young woman of 15, who had a tumour about the size of a pullet's egg, of a purple hue, which occupied the right half of the tongue, extending from nearly half an inch of the apex to the ***isthmus faucium***; and reducing, by compression, to a narrow slip, the width of the left or sound half of the organ. It began at about nine years previously, in a blue swelling, about the size of the tip of the finger, which remained stationary till the last six weeks, when it rapidly increased during the use of pills, which she took for fits with which she had been attacked, but which produced no affection of mouth. It measured two inches and a-half in length, one inch and a-quarter in breadth, and one-inch and a-half in thickness; was covered posteriorly by warty excrescences; and when drawn forcibly to the left side, allowed the boundaries to be traced by the finger under the arch of the palate, where sound structure could be felt beyond it.

The operation was performed on the 6th of June 1838, in the following way: "The patient being seated, the head slightly extended, and the *os hyoides* felt, an incision was made from over it upwards and forwards, an inch and a-half in length in the mesial line, through the skin, cellular substance, and raphe, of the mylohyoid muscles. With the edge of the knife, but chiefly by its handle, way was made for the finger between the two *genio-hyoid* and the two *genio-glossi* muscles. A tenaculum was next passed through the apex of the tongue, by means of which it was drawn out of the mouth and held so, during the subsequent part of the operation by Mr Mayo (Mr Tuson, Dr Warren of Boston, U. S., and Mr B. Phillips, being likewise present.) Into the wound in the neck, a strong needle with an eye at the point in a fixed handle, was now conducted and passed through the basis of the tongue into the pharynx, a little to the left of the mesial line: the loop of ligature which it carried was then, by means of a blunt hook, drawn forwards out of the mouth, and the needle withdrawn from the wound over one of the ends. The loop being cut, two ligatures were obtained; one of these was placed along the upper surface of the tongue, so as to bound the disease on its left side, and carried through the apex of the tongue from above downwards by means of a large curved needle, through which the oral end of the other ligature was now also passed. Fixed in a porte-aiguille, this needle was next carried through the floor of the mouth immediately behind the last molar tooth, on the right side, directed at first, and for the greater part of its course, perpendicularly downwards, then inclined mesial, and brought out at the incision in the neck. There were thus two ligatures, the four ends of which hung out of this wound: one of the loops was so disposed as to encircle the right half of the tongue at its basis beyond the tumour; the other was placed longitudinally on the upper surface of the tongue, longitudinally and obliquely below. Being tied, (and this was done as tightly as possible,) the diseased mass was circumscribed posteriorly, laterally, and in some measure inferiorly. A third ligature was now passed through the fore-part of the tongue, so as to isolate at this point the diseased from the healthy structure."—Pp. 23–25.

The operation was well borne; and the patient, for a fortnight, had food and medicine conveyed into the stomach, solely through an elastic gum catheter, introduced into the œsophagus along the left side of the mouth. The strangulation of the diseased part not being completely effected by the ligatures, it was found necessary, on the fifth day after the operation, to endeavour to tighten them, by carrying a canula over them. The plan, however, did not answer; but on the twelfth day, the author succeeded in his object, by means of a loop of silver wire, which effected the death of the part, and produced separation on the fifth day from its employment. The process of cicatrization went on favourably; and on the 10th of July, the patient left the hospital. There was no appearance of a recurrence of the disease after a lapse of sixteen months; and a stranger would not discover, by her speech, that she had lost so large a portion of the tongue. He would merely remark that she lisped.

The following communications follow in the Surgical division.
Case of Fracture of the Coracoid Process of the Scapula with partial dislocation of the Humerus forwards, and Fracture of the Acromion process of the Scapula; by John F. South, Esq. Assistant Surgeon to St Thomas's Hospital. The title of this paper sufficiently describes the nature of the injury, which was satisfactorily made out by examination after death. A notice is appended, of a fractured coracoid process, which came under the notice of Mr Arnott, at the Middlesex Hospital.

Case of Aneurismal Tumour in the orbit, cured by tying the Common Carotid Artery; by George Busk, Surgeon to the Seamen's Hospital, Dreadnought. This was the case of a seaman of 20 years of age, who, by a severe blow on the head, became for some time insensible; had hemorrhage from the right ear, and deafness in that organ; swelling in the eyelids and integuments of the left eye, with fixed dilatation of its pupil; incapacity to move its globe; and slight paralysis and feeling of numbness on the left side of the face. Purulent discharge took place on the right ear, which continued some time; and soon afterwards pain in the left eye, and deposit of purulent matter between the laminæ of the cornea, which was discharged by ulceration. In about four months from his accident, he had small-pox; and on his recovery, and return from the Small-pox Hospital, (to which he had been sent,) the eye was found to be prominent, and to have a large and irritable ulcer on the cornea. The deafness continued, with *tinnitus aurium*, and the paralytic affections of the globe of the left eye and muscle of the face remained unabated.

Some improvement took place, after some weeks, in the ulceration of the cornea and general health; but a distinct pulsation was then discovered in the globe of the eye, which was found to proceed from a firm pulsating tumour, in the upper and inner part of the orbit, within the superciliary ridge. The eye was hot and uneasy, and the patient was much troubled with loud noises in the head, but no pain. Pressure on the left common carotid put a stop to the pulsation and noises; and hence the author inferred the existence of a common cause, and this most likely an aneurism of some vessels within or close upon the orbit. An operation was determined upon, and the common carotid was accordingly tied in the usual place and manner. The patient went on favourably; and in about two months was discharged cured. The ulcer of the cornea was healed, and the noise in the head ceased; but the paralysis of the eye and face continued; and the deafness was very singularly transferred from the right to the left ear.

The author is disposed to consider the affection now mentioned, as arising from true aneurism, rather than aneurism by anastomosis; and he gives a similar case, which occurred to Mr Scott at the London Hospital, in which protrusion of the right eye took place after a fall into a ship's hold. During the patient's treatment, the prominence increased, pulsation became evident; and on the accidental occurrence of profuse arterial hemorrhage from the nose, which was found to be commanded by pressure on the common carotid artery, that vessel was immediately secured. The protrusion of the globe, by this means, "directly receded in a great degree, and its prominence afterwards gradually diminished."

Statistical notices of one hundred and twenty cases of Carcinoma uteri, with remarks; by J. C. W. Lever, Esq. The principal deductions made by the author, in respect to this formidable disease, are the following; but we are not informed as to the locality in which the cases occurred. The period of life most obnoxious to *carcinoma uteri*, was from the fortieth to the fiftieth year. Of the persons affected, 5 per cent. only were of unmarried women, and 7 per cent. of widows, (who, we presume, had early became so;) while 86 per cent. were of married women; thus refuting the idea, that celibacy favours the development of the complaint; 34 per cent. were married between the age of 15 and 20; 36 per cent. between the ages of 20 and 25; 20 per cent. between the ages of 25 and 30;

and 1½ per cent. only occurred between that period and 45; fractions in all cases being put aside. Ten barren women, or about 8 per cent. occurred out of 113, who were married; and an average offspring of about 5¾ each, to the 103 bearing women. The abortions were 2½ each on an average among 40 who had miscarried; or near 17 per cent. of the whole of the conceptions among the 103 child-bearing women—20 per cent. of the affected were of fair, 79 of dark complexions.

Only 20 per cent. were of persons whose uterine health was good in early life. In 15 per cent. the patients suffered from amenorrhœa; in 54 per cent. from dry amenorrhœa; and in 2½ only, from other uterine diseases.

Death occurred in 107 cases; the average duration of the complaint being 20¼ months; and the great majority being between the bounds of 19 and 22 months. The register of the obstetric out-patients of Guy's Hospital, we are informed by the author, exhibit the proportion of 1 in 7, or nearly 13 per cent. of cases of *carcinoma uteri*, to other uterine disease.

His remedial views on the subject, the author will give on some future occasion.

Remarks on the Acute Form of Anasarcous Tumour of the Scrotum; by R. Liston, Esq. Surgeon to the North London Hospital, &c.—In the diffuse watery tumour of the scrotum, which is a frequent attendant on general dropsy, Mr Pott points out the danger of unloading the cellular texture by free incisions, and advises the employment of punctures only. In a class of cases which have come under the author's notice, of rapid distension of the scrotum, with serosity, he found that the complaint was only to be arrested by early and free incisions.

" This distension is or is not attended by redness or erythema of the surface; but there is reason to think, from the suddenness of the accession, and from the appearances on exposing the cellular tissue, that there is no actual inflammation of its texture; there being no induration, nor any appearance of lymph or puriform fluid in the areolæ.

" The affection has generally supervened upon abscess or ulcer, perhaps trifling, in the perinæum or groin. Its accession has been sudden, the swelling and tension becoming very great and alarming, even within a few hours. The most dependent part, generally the posterior, will be found at a very early period to present one or more deeply-seated ash or tawny-coloured spots; these extend; the integument is speedily involved; and, unless active measures be adopted, the entire coverings and investments of the testicles will be destroyed, and these organs exposed."—Pp. 289–90.

The author gives particulars of six cases in exemplification of the practice which he recommends.

Remarkable Case of Dry Gangrene occurring in a Child 3 years and 7 months old; by Samuel Solly, F. R. S. Lecturer on Anatomy and Physiology, and Lecturer on Comparative Anatomy at St Thomas's Hospital.—This interesting case was of a boy 3 years old, whose feet became of a blackish purple colour, and soon exhibited sloughs, which extended over the left foot, and produced an amputation of it in about four months.

Three months from the first attack, the upper extremities became affected, and when Mr Solly saw the child two months afterwards, the following were the phenomena observed.

" His right fore-arm was gone, having been partially amputated by nature at the elbow-joint by the disarticulat ionof the radius, though the ulna had been divided lower down, opposite a point which might be seen in the detached radius, as at that place the bone was thinner, a portion of its surface having been removed by absorption, where the line of separation had first commenced. The slough had extended above the elbow-joint, where nature appeared to be making a second attempt at amputation, from the distinct though comparatively pale line of ulceration between the living and dead portions of the limb.

" The whole of the left fore-arm, and about half the upper arm, was in a state of dry gangrene; but there was a distinct line of separation in the upper arm.

" The foot of the left leg was completely removed just above the ankle-joint, between the epiphysis and the shaft of the tibia and fibula, leaving the extremities of the bone exposed, the soft parts presenting a surface healthy and granulating in one part, but sloughy in another.

" On the right foot the phalanges of the second and third toes had been removed by the same unsparing hand, the stumps having a healthy cicatrix; but on the calf and knee of the leg there were livid spots. Such was the extraordinary appearance of this poor little child the first time I saw it. The pulse in the carotids was 140, feeble, easily arrested, but distinct to the eye.

" The action of the heart more feeble than natural, but unaccompanied by any unnatural or irregular sound. The mother observed that, when every thing was quiet, at night, it sounded as loud as the ticking of a watch.

" The intellects were perfect, and the child, on the whole, wonderfully quiet and tranquil, but complains much of feeling cold unless close to the fire."—Pp. 256–257.

The process of healing went on under proper support, and when Mr Solly saw the child again, about three months after his first visit, he found that " nature, unassisted by the surgeon, had amputated the three extremities, and formed stumps, which might shame many formed by the operator's knife. The stump of the right arm was as perfect as could be desired; the bone in the left projected slightly, but was in the course of removal by absorption. The stump of the left leg was nearly healed, with a very slight granulating projection opposite the bone. The child's health was much improved, his spirits good, and he was freer from pain." —P. 265.

A drawing is given of the appearances of the limbs at Mr Solly's two visits; and he considers the progress of the disease to have been identical with what is usually observed in senile gangrene.

On the Structure, Physiology, and Pathology of the Persistent Capsular Investments and Pulp of the Tooth; by Alexander Nasmyth, M. R. C. S.—In this paper, which is principally of a physiological character, the author's attention is directed to the third or eruptive stage of dentition; the two first stages, the follicular and saccular, having been sufficiently treated of by different physiologists previously.

The author is disposed to consider Cuvier as in error, when he represents the cutting of a tooth as a process of disruption instead of absorption; and he was led to regard the common opinion as ill founded, where the enamel was thought to possess, after protrusion, no external covering whatever. The consideration of the existence of *crusta petrosa* on the enamel of the teeth of some animals, as a dense protecting investment, led him to doubt whether there might not be something of analogy in those cases where the enamel appeared entirely bare.

Some years ago, after subjecting the human teeth to the action of acid, he observed detached portions of membrane floating on the surface of the solution, which were found to be exceedingly delicate, easily separable, and continuous into the chamber of the tooth, with the structure covering the fang. He succeeded in tracing this as a distinct coat or capsule, from the fangs, over the whole crown of the tooth; and has given it the name of the *persistent dental capsule.* Though this membrane is soon torn by attrition, yet it is at any time capable of being readily detected in shreds after the maceration of a tooth in muriatic acid, diluted to one-eighth of its original strength. It then bears the appearance of the capsule of an unobtruded tooth, being fibrous externally and reticular internally; its earthy deposit (supposing any existed in it, which, from a subsequent passage, seems doubtful,) having been entirely removed. The author's general conclusion on the subject, therefore, is, that the enamel and body of human, and all other teeth, simple as well as compound, is covered by a distinct capsular investment, and that this is converted in some animals, as the Ruminantia, into *cementum* or *crusta petrosa* by the deposit of earthy matter in its substance. The only writer who is known to the author as having approached to a correct knowledge of this cortical substance is Fraenkel, who, in an inaugural dissertation published in 1835, states, that he had observed a continuation of a thickened cortical substance, from the body of the tooth, to the enamel, in a small portion of which a single layer could be readily removed.

The author has likewise satisfied himself of the existence of a distinct layer of substance, externally to the *crusta petrosa*, when that is considerable which varies in thickness, with the thickness of the petrous crust, and may, he thinks, be possibly a cartilage of it.

The capsular investment on the fangs of the teeth, which forms the second section of his subject, is covered with a thin crust in those animals which have a *crusta petrosa;* but in man, the osseo-membranous covering is much thicker round the fang than round the enamel, and increases in size with the age of the individual. The capsular investment he considers as the principal agent in producing absorption of the fangs of the deciduous teeth, on the application of adequate pressure from the ascending permanent ones; when that pressure does not take effect, the deciduous teeth remain firm, without limit to their persistence; but when from disease of the fangs, and consequent affection of their investing membrane, absorption does not take place, the fangs of the temporary teeth only partially disappear, while a part of them remains wedged between their permanent successors, so as to render disengagement very difficult. Cuvier and Rousseau are quoted by the author as being of opinion, that pressure produces destruction of the temporary teeth, by removal of their nutriment; while, on the other hand, it is only by exciting the action of the contiguous membrane, which, in some circumstances, may even produce absorption of the fangs of the permanent teeth, though in a less perfect manner, that this process is accomplished. It sometimes happens that the investing membrane assumes a morbid action, and throws out an enlarged growth of cementum, or exostosis. This disposition may be induced by exposure to the atmosphere; by partial destruction of the membrane; by the irregular pressure of antagonist teeth, or want of pressure from their absence.

Whether the absorption of the alveolar processes following the exhibition of mercury, or other mineral medicines, be the work of the investing membrane, the author has not satisfied himself. Alveolar abscess sometimes takes place suddenly, from death of the fang and destruction of its membrane, and whenever disease attacks the latter to any considerable extent, extraction of the tooth is the only effectual remedy.

The third section of the author's subject is the pulp of the tooth, which is a continuation of the capsular membrane, and on which depends the growth of the tooth, or the increment of solid matter of which it may be composed. When the growth of the tooth ceases, the primary function of the pulp is over; but when growth is unlimited, vitality is preserved, and the function goes on. Under various circumstances of disease, whether in animals whose teeth are of limited or unlimited growth, the pulp often becomes osseous, and thus loses its original character. In some animals, however, there is an interstitial osseous deposit, which the author is disposed to consider a fourth natural constituent, in addition to the ivory or body of the tooth, the enamel, and the *crusta petrosa*.

The author promises to go on with his researches.

The preponderance in number of the communications in the present volume are the pathological, which we shall now take in the order of their occurrence. The first comprises *Cases of Spasmodic disease accompanying affections of the Pericardium;* by Richard Bright, M. D. F. R. S., President of the Society, Physician Extraordinary to the Queen, &c. These cases are three in number; and in each of them, the pericardium was seriously implicated; and it appeared to the author that the phrenic nerve was the more immediate means of communicating irritation to the spinal chord. In the first case, severe chorea came on after symptoms which bore a good deal the character of acute rheumatism. The patient died about the 16th day after the occurrence of the spasmodic symptoms; and on examination, the heart, pericardium, and contiguous part of the lungs, bore distinct marks of considerable recent inflammation.

In the second case, trismus, and convulsive affections, bearing sometimes a tetanic character, followed on acute rheumatism, and in twenty hours from their attack proved fatal. Severe inflammation was found in the chest, particularly on the pleura of its right side, and on the right side of the pericardium, down which the phrenic never runs.

The third case was one of much glandular disease in a female of 17, where *phthisis pulmonalis* was suspected; and where severe dyspnœa, resembling that of hysteria, supervened, and assisted in gradually wearing out the patient. Extensive glandular disease was found in the abdomen; but the chest and lungs were free from all tubercular deposit.

" The heart and pericardium formed a hard mass, firmly glued to the sternum by the white fungoid matter deposited in the anterior mediastinum, so that on raising the bone they were round like a hard tumour attached within.

" The heart itself presented a curious specimen of disease: a thick layer of yellow malignant matter lined and covered the pericardium, both the portion attached to the heart and the reflected portion; the two deposits were strongly glued together in most parts, and were a quarter of an inch in thickness. In other parts the two layers were easily torn from each other. The phrenic nerve was seen on the right side, passing down, pressed upon, and almost imbedded in this diseased mass."—P. 17.

A plate of the appearances is given. The alternation of chorea with acute rheumatism has been long known or suspected; and that pericarditis follows, and, through the medium of the phrenic nerve, produces in the spine that affection which gives rise to convulsive paroxysms, there is, he thinks, every reason to believe. He is not of opinion with some authors, that inflammation in or about the spine is necessary to the production of chorea.

In addition to the authorities referred to by Dr Bright, it may be observed, that pericarditis with choreiform symptoms is mentioned by Dr Craigie as having been observed by him, and also by Dr Roeser of Bartenstein. (Practice of Physic, Vol. ii. Book ii. Chapter iii. §. iii. p. 151.)

Memoir on Typhlo-Enteritis; or Inflammation and Perforative Ulceration of the Cæcum, and of the Appendix Vermiformis Cæci; by John Burne, M. D., Physician to the Westminster Hospital, Lecturer on the Practice of Medicine, &c. This paper may be regarded as a continuation of one on the same subject, which appeared in the the twentieth volume of the Medico-Chirurgical Transactions, and it contains several additional cases, in further illustration of the pathology of the cæcum and appendix.

The liability of the cæcum to have a lodgement of undigested substances in it produces irritation, and great disposition to symptomatic inflammation, in this part of the alimentary canal; which latter, when it occurs, usually terminates by resolution; the subsidence of the spasm and removal of the inflammation allowing the muscular coat of the cæcum to resume its functions. No instance of perforative ulceration of the cæcum from internal disease has occurred to the author; but perforative ulceration from without, he states to be common, owing to abscesses resulting from perforation of the *appendix vermiformis*, bursting into the cæcum. Several interesting cases are given of inflammation of the appendix, and perforative ulcerations of that portion of the gut, and their consequences. The author is of opinion, that Dupuy has formed an erroneous conclusion, when he viewed the occurrence of abscesses bursting into the cæcum, as having originated in its cellular texture, instead of being secondary, and consequent on perforative ulceration of the cæcum or its appendix. He does not conceive that there is any reason for supposing that inflammation of the mucous membrane of the cæcum can ever give rise to inflammation in the adjacent subcæcal cellular tissue.

Case of Carditis. By Thomas Salter, Esq. F. L. S. of Poole. The case occurred in a man of 50; and the principal symptoms were dull and heavy, but not lancinating pain in the lower part of the chest, rather inclining to the left side; very severe oppression and distress in breathing, increased at intervals, but never quitting him; a frequent and small pulse; inability to lie down, and a feeling as if he could not live. There was no cough, nor sign of pulmonary affection, and frequently considerable uneasiness in the left upper arm. The symptoms continued to a certain extent for about six weeks; but they were most severe and alarming for sixty-five hours only before death.

On examination, the heart was found to be rather larger than natural, and of moderate firmness; large white or yellowish coagula were contained in the cavities; and commencing ossification was discovered in the ascending aorta, but no disease in the lining membrane of the heart, or in the valves. The muscular substance of the left ventricle was of a light yellow hue and fibrous texture; and exhibited purulent matter at the surfaces of the various sections that were made in it. In some parts, small cavities filled with purulent matter were found, varying from the size of a pin's head to that of a small pea.

The pericardium exhibited " unusual vascularity," which was attributed by the author to inflammation; though there was neither on this nor on the surface of the jejunum, (which was likewise stated to be much inflamed,) any effusion of coagulable lymph, which might have been expected to appear under such circumstances.

On the Softening of Coagulated Fibrine; by George Gulliver, F. R. S., Assistant Surgeon to the Royal Regiment of Horse-Guards.—The author's object in this paper is to ascertain the differences which exist between various modifications of animal matter, and pure purulent matter; and he has been able to infer, that softened fibrine, which has generally been regarded as a purulent fluid, is, notwithstanding, of an essentially different character. His experiments and observations were made on fibrine from the heart; on that obtained from venous blood by agitation; on the fibrinous concretion formed by inflammation on the pleura of a dog; on softened fibrine in the heart and aorta; and on softened fibrine in the veins. His general deductions are the following, viz.

" 1*st*. That coagulated fibrine, when removed from the body and subjected to a blood heat, commences to soften in about forty hours, assuming the colour and consistency of pus, but easily distinguishable from it by microscopic and chemical examination.

" 2*d*. That the purulent-like fluid found in the fibrinous clots of the heart and arteries, and so frequently in the veins, is essentially distinct from pus, and analogous to, if not identical with, softened fibrine.

"3*d*. That the softening of coagulated fibrine is an elementary pathological condition of frequent occurrence, distinct from suppuration, and constituting a considerable proportion of the cases generally denominated suppurative phlebitis.

"*Lastly*, I may observe, that I have frequently found pus mixed in considerable quantities with the pulpy fibrinous matter; and in two instances some purulent globules were observed, completely insulated, in the centre of a clot, from the neighbouring tissues. But in both these cases pus was also detected in the blood; and when it is considered how frequently this contamination exists, it will not appear surprising that the particles of pus should become entangled in coagula contained in the vessels. Nor does this circumstance at all invalidate the conclusion, that the softening of coagulated fibrine is a disease of much interest and importance, quite distinct in its nature from suppuration, although the two affections have been generally regarded as identical."—Pp. 151, 152.

It is a particular source of gratification so often to see, that gentlemen who are connected with the public medical service, have talents and disposition to employ that leisure which peace affords them, in useful inquiries for the improvement of their profession. The general taste and acquirements of the profession in the public service, as well as in civil life, have fortunately much increased of late years; and the country owes very important obligations to Sir James Macgrigor, the Director-General of the Army Medical Board, for his efficient and successful endeavours to raise the character of army medical men, by the superior education required of them, and by that cultivation of the collateral sciences which they are encouraged to make, and which more effectually enables them to profit by the opportunities so extensively afforded them, both in active and quiescent service, of advancing the interests of science, and promoting the credit and usefulness of their profession.

Contributions to the Pathology of the Spinal Cord; by William Budd, M. D.—This communication contains some very valuable cases from the author, from Mr Busk of the Dreadnought, and Mr Granger, in illustration of the operation of the reflex function, as it has been termed, in man; and to show that the phenomena attaching to it take place in the human race just as in the lower animals.

When an animal is decapitated, and a stimulus applied to the surface of the body, the influence of that stimulus is applied to the spinal marrow, and being thence *reflected* to the motor nerves, causes, as is well known, contraction of various muscles. A similar effect the author found to take place in cases of paralysis arising from spinal affection.

In one of those cases, sensation in the lower extremities was nearly extinguished, and the power of voluntary motion entirely lost. But when any part of the limb was pinched or pricked, though there was a very trifling sensation produced by the act, the limb jumped up with great vivacity; the toes were retracted towards the instep; the foot raised on the heel; and the knee bent, so as to raise it off the bed; the limb being maintained in that position for several seconds after withdrawing the stimulus, and then becoming suddenly relaxed. The tickling of a feather on the instep, though not at all felt by the patient, produced still more violent convulsions; and this always occurred with much force during defecation and micturition; some mechanical means being obliged to be employed to secure him during these acts.

In all the cases mentioned, the involuntary movements were of the same character as those observed in decapitated animals, and were quite independent of volition. They were not associated with a sense of fatigue, but the power which caused them was subject to exhaustion, and was renewed by rest. Heat was a powerful means of excitement; and strychnia, given internally, increased the susceptibility to involuntary movements, while prussic acid and digitalis had a contrary effect. From a consideration of the fact, that the convulsions of tetanus are either capable of being produced or increased by impressions made on the skin and senses, the author is induced to consider it as proper to avoid, in this complaint, multiplying impressions, especially those of a painful kind, as leeching, cupping, and blistering, or even purging. He thinks, also, that, as opium given to animals before decapitation renders the motor actions of the spinal cord more active and powerful, it is to be avoided in the treatment of tetanus, which may with more propriety be entrusted to the operation of hydrocyanic acid, conium, and digitalis.

Memoirs on some Principles of Pathology in the Nervous System; by Marshall Hall, M. D., F. R. S. L. and E.—This is the first of a series of memoirs, which it is the intention of the author to communicate to the Society, on the subject of nervous action under various circumstances of disease. It is entitled, ***On the Condition of the Muscular Irritability in Paralytic Limbs,*** and is to be followed by a second memoir, containing the author's deductions on the reflex action in certain cases of paralysis, tetanus, &c. and on the retrograde action in cases of disease of the spinal marrow.

In the present communication, the author enters at some length into an examination of the discrepancies of opinion which have taken place among the most distinguished authors, in relation to the existence (which some affirm and others deny) of irritability in the muscular fibres of paralytic limbs. Those discrepancies he considers as being amply accounted for, by the difference of the phenomena which occur in respect to *cerebral paralysis*, or that which removes the influence of the brain; and *spinal paralysis*, which removes that only of the spinal marrow.

Strychnine, when exhibited in paralytic patients, often manifests its powerful influence on the paralytic limbs, to the exclusion of the sound ones, though its power must have been supposed to be equally diffused down the spinal marrow along the nerves to the right and to the left, and therefore to the muscles which those nerves supply. It therefore appeared to him, that the irritability of the fibre in the cases, where the paralysed muscles were most affected, must have been augmented; and it is to this result that his experiments and observations lead. When there was cerebral paralysis only, he found that slight shocks of galvanism, which would produce no effect on sound limbs, agitated paralytic ones; whereas, if the disease arose in the course of the nerves, or within the lumbar vertebræ, the muscles of the paralytic limbs were much less irritable than those of the sound.

" I visited a patient," says the author, " affected with hemiplegia, including paralysis of the face, and I passed a slight galvanic shock through two pieces of metal, of which one was placed over each cheek. The muscles of the paralytic side were most affected. I repeated the experiment with the same result. I now compared with these, two cases of injury of the facial nerve, passing the galvanic shock in the same manner, through the fibres of the orbicularis: it was now the muscle of the healthy side which was affected by the galvanism, the eyelid of that side being closed, whilst that of the paralytic side gaped as before. I next compared the effect of galvanism in two cases of complete paralysis of the arm, one hemiplegic, the other the result of dislocation of the shoulder. The muscles of the former were more, those of the latter less, irritable than those of the healthy arm respectively, as were also those of the arm of a patient affected with the paralysis induced by lead. Lastly, I compared the cases of paralysis of the lower extremities, one arising after pertussis, and therefore cerebral, the other, I think, from disease within the lumbar vertebræ: in the former there was augmented, in the latter, diminished irritability."—Pp. 203, 204.

The author concludes therefore, that, " in cerebral paralysis, the irritability of the muscular fibre becomes augmented, from want of the application of the stimulus of volition; in paralysis arising from disease of the spinal marrow and its nerves, this irritability is diminished, and at length becomes extinct, from its source being cut off.

" We may further deduce," he continues, " from the facts which have been detailed, that the spinal marrow, and not the cerebrum, is the special source of the power in the nerves of exciting muscular contraction, and of the irritability of the muscular fibre; that the cerebrum is, on the contrary, the exhauster, through its acts of volition, of the muscular irritability.

" As a further deduction from the same facts, we may infer the diagnosis between cerebral and spinal paralysis: mere cerebral paralysis is attended by augmented irritability, whereas spinal paralysis is that which is attended by diminished irritability."—Pp. 205.

A Case of Enlargement from Melanoid Tumour of the Prostate Gland, in a child of five years of age; by R. A. Stafford, Surgeon to the St Mary-le-Bone Infirmary.—The subject of this case had, for three or four months, an irritable bladder, with a continual wish to discharge urine; and a large and tumid abdomen. On the occurrence of entire inability to pass his water, and the appearance of a large tumour in the abdomen, which was found on examination to be a distended bladder, the elastic gum catheter was passed, and twenty-five ounces of natural coloured urine were drawn off. As accumulation took place rapidly, the catheter was left in the bladder; but the boy sank and died in eight days.

The bladder was found to be contracted to the size of a turkey's egg, and to have some purulent matter mixed with about one ounce of urine which it contained. The prostate gland was equal in size to the largest walnut, and had its third lobe about the magnitude of a hazel-nut, which is about the size of the whole prostate in a child of his age. It was encephaloid in colour, consistence, and texture, but one part of the cut surface was so dark as to present the appearance of their being melanotic, mixed with the encephaloid matter.

Case of Congenital Absence of the Pericardium, with observations; by T. B. Curling, Assistant-Surgeon to the London Hospital, &c.—In this case, paralysis of the lower extremities arose from exposure to wet, and gradually extended upwards, producing, after some weeks, asphyxia and death.

The principal diseased appearance was ramollissement of the central part of the whole *medulla spinalis;* but on opening the chest, the heart was found to be completely exposed, lying loose in the cavity of the pleura, in immediate contact with the lung, but without any appearance of pericardium, except a slight sort of rudiment of one on the left side.

Cases are mentioned of the absence of pericardium, from Baillie and Breschet, and from Woolf, Walter, and some others; and the author considers the opinion of Dr Baillie as far too restrictive, when he regards the use of the pericardium as being merely to keep the heart in a steady position, for it seems to him, that inclosure in a serous bag, separate from that of the lung, must be a great exemption from the effects of inflammation. It may be remarked, however, that deposits of lymph are not unfrequently found on the surface of the heart, without the previous production of any serious symptoms of an inflammatory nature.

On a peculiar form of Congenital Tumour of the Neck; by Cæsar Hawkins, Esq. Surgeon to St George's Hospital.—The author adverts to a great variety of encysted tumours which are occasionally found in infants; but directs his particular attention to a peculiar form of congenital tumour appearing in the face and neck, which is composed of many cysts united together, and having in them so large a portion of organized matter, as to give them a solid character. In one of the cases mentioned by him, (there being seven in all,) when death took place, with excessive emaciation, at the age of about three months, the tumour was on the right side of the neck, and about the size of a large orange. It was found to be "composed of a great number of small cysts, many hundreds probably, varying in size from a pea to a walnut, closely joined together, and composed of delicate membranes, like very fine peritoneum, but in some parts covered by fibrous structure, giving the cysts the appearance of thin pericardium, and very few of them were so far insulated as to admit of being dissected out without cutting through others. The fluid in most of the cysts was transparent, with scarcely any trace of coagulable matter, but in others the contents were of every shade of red, even as dark as venous blood, but without any coagulum, and evidently only coloured secretion." —P. 238.

On pursuing the dissection, the cysts were found to be deeply imbedded in the surrounding substance, and to extend behind the pharynx and œsophagus; some as high as the basilar process, others as low as the sixth cervical vertebra. They were formed in the common cellular texture, and, from their inaccessible situation and intricate connection, presented little promise of benefit from an operation. The cysts did not exhibit much disposition to inflammation, and in one case, repeated punctures seemed, in about a year, to wear out the disposition to further secretion; to reduce the swelling to about a third of its original size; and to leave it a loose pendulous bag, principally composed of skin and fat.

Case of a Girl who voided from the Urethra a number of Entozootic Worms, not hitherto described, with an account of the animals; by T. B. Curling, Assistant-Surgeon to the London Hospital, &c.—With the assistance of Professor Owen, and Mr John Quekett, the author has been able to give a very good account of the appearance and structure of these little animals, which he illustrates by lithographs taken from drawings made by himself. He refers them to the order Nematoidea of Rudolphi, in which they would constitute a new genus, whose character he thus describes:

"Genus Dactylius.

"Corpus teres, elasticum, annulatum, et utrinque attenuatum, caput obtusum, os orbiculare, anus trilabiatus.

"Dactylius aculeatus.

"Capite obtuso, toto corpore aculeorum serie multiplici armato, caudâ obtusâ et annulatâ.

"Hab. in Hominis vesicâ urinariâ."

The females were about four-fifths, the males about two-fifths of an inch in length.

The patient had been occasionally troubled with ascarides, after some pectoral complaints, and derangement of the intestinal mucous membrane. The worms were discovered in the urine after an attack of measles, which left her weak and much emaciated. After the use of small doses of the *Oleum Terebinthinæ*, no more of them were observed, either living or dead.

The only two papers remaining to be noticed in this volume may be regarded as appertaining principally to the subject of obstetrics. The first is *An Account of a Fœtus of Seven Months, with its placenta partially adherent to a Nævus, occupying the Scalp and Dura Mater;* by Robert Lee, M.D., F. R. S., Physician to the British Lying-in-Hospital, and Lecturer on Midwifery at St George's Hospital.—No vascular union existed at the place of junction. The author refers to a few cases of a description somewhat similar.

The second is *On the Structure of the Corpus Luteum;* by Robert Lee, M. D., F.R.S.—"The Graafian vesicle in the human ovarium is a small spherical pellucid sac, which contains a fluid, the ovum, and the granular substance in which it is imbedded. The vesicle itself always consists of two distinct coats or membranous layers, which adhere firmly together. The external surface of the Graafian vesicle adheres loosely to the stroma or proper substance of the ovarium, in which it is imbedded by soft cellular substance, blood-vessels, and nerves.

"Soon after impregnation, the coats of the Graafian vesicle and the peritoneum covering it give way by absorption, the contents of the vesicle escape, and between its outer coat and the substance of the ovary, the *corpus luteum* is gradually formed."—P. 329.

Doubts have, however, been entertained by physiologists, as to the precise mode in which the formation of the *corpus luteum* takes place; whether it is produced by a thickening of the inner layer of the Graafian vesicle, or is an entirely new substance deposited between its coats, or around its external surface; or even capable of being occasionally formed in the ovaries of women who have never been pregnant.

Some opportunities presented themselves to the author, of particularly examining ovaries in two months of pregnancy; and from these he had made the deductions in respect to the structure and formation of the *corpus luteum*, which form the subject of his paper. On cutting into the left ovarium, in one of the cases mentioned, which was larger than the right, had a considerable prominence on its convex edge, and a small circular depression at the point of the prominence, into which a bristle could not be made to pass, the author found a *corpus luteum* of an oval shape, and deep orange colour, with the Graafian vesicle in its centre having its coats thickened and contracted, and readily divisible into two distinct layers.

" The outer surface of this cyst is so loosely attached by cellular tissue to the *corpus luteum*, that it can easily be separated from it. The *corpus luteum* itself varies from a line to a line and a quarter in thickness, and when examined with a magnifier, appears to consist entirely of small yellow globules or particles contained in cellular membrane.

" Around the outer surface of the *corpus luteum*, and completely investing it, there is a white layer varying in thickness, the outer part of which loses itself in the substance of the ovarium, of which it appears to form a part, and to be similar in structure, having the mouths of divided vessels distinctly perceptible, as in other parts of the substance of the ovarium. The inner portion of this white layer, which appears to be condensed stroma, is separable on the one hand from the *corpus luteum*, and on the other from the substance of the ovarium, so as to give the appearance of a distinct membrane, considerably exceeding in thickness both layers of the Graafian vesicle." —Pp. 332.

" As gestation advances, the deep yellow colour of the *corpus luteum* fades, and the Graafian vesicle in its centre coutracts and assumes a peculiar white membranous appearance, with small bands passing outward through the substance of the yellow matter, like the radii of a circle."—Pp. 333.

Drawings are given to illustrate these appearances.

From the circumstances now mentioned, the author infers, that the *corpus luteum* is a substance formed round the outer surface of the Graafian vesicle, and has no capsule ; that its yellow matter is in contact with the substance of the ovarium ; that it almost completely disappears about three months after parturition ; and that, though a substance much resembling it is sometimes found in the ovaria of persons who have never been pregnant, this is produced by morbid states of the Graafian vesicle, and the yellow matter found within that vesicle, and not around it. In women who have died during menstruation, (of which the author gives two examples,) appearances are sometimes observed, which might, without careful discrimination, be mistaken for true *corpora lutea.*

Our readers, who wish to study this subject, will do well to compare the observations by Dr Lee, with those by Dr Paterson, in the present volume of this Journal, (p. 49.)

ART. II.—*Statistical Reports on the Sickness, Mortality, and Invalding among the Troops in the United Kingdom, the Mediterranean, and British America; prepared from the Records of the Army Medical Department and War-Office Returns.* Presented to both Houses of Parliament by Command of Her Majesty. London, 1839.

THE general object of the present reports is sufficiently explained by their title. They consist of three general divisions; the *first*, devoted to the sickness, mortality, and invaliding among the troops stationed in the united kingdom; the *second*, to the sickness, mortality, and invaliding of those distributed over the coasts and islands of the Mediterranean; and the *third*, to the sickness, mortality, and invaliding of the troops stationed in the various parts of British America.

Though the report on the sickness, mortality, and invaliding of the troops in the West Indies has already been some time before the public, yet perhaps methodical arrangement would have required that the first part of the present report on the troops in the united kingdom should have preceded all the others; because it is manifest, that, in estimating the influence of foreign climates, some standard ought to be established; and the ratio of sickness and mortality of the troops in this country forms as good a standard for estimating the influence of climate as can well be devised. It is obvious, indeed, that, whether this be the least unhealthy climate among all those surveyed or not, it is the native soil of all those bodies of men whose sickliness and mortality in various foreign stations is the subject of inquiry. It is an established principle in human physiology, and may be received as an element in vital statistics, that *cæteris paribus*, and excluding the operation of directly deleterious principles, as telluric miasmata, contagious and endemial causes of disease, the human race always thrive best and enjoy the best health in their native soil. Assuming this principle, therefore, in the present inquiry, it must be admitted, that all increase of sickliness, and all augmentation of mortality beyond what prevails among bodies of men placed in similar circumstances in the different parts of the united kingdom, must be ascribed in general to the insalubrious influence of the soil and climate in which the troops presenting such increased rates of sickliness and mortality are stationed.

Impressed with the accuracy of the principles now stated, Captain Tulloch commences the present report with a view of the facts illustrating the rates of sickliness, mortality, and invaliding observed in the troops of the united kingdom. To this head it is possible to refer only two classes of troops; the *first*, those regiments of cavalry, which have not been serving abroad during the period embraced by the report; and the *second*, the household troops, whose service is for the most part confined to the duties of the metropolis.

It appears further, however, that, in consequence of the great disproportion found to exist between the sickness and mortality of the Foot Guards compared with the Household Cavalry, quartered in the same metropolis, and even with the other corps of cavalry quartered throughout the kingdom, it becomes necessary to keep the calculations for each of these descriptions of force distinct, in order more readily to ascertain the kinds of disease to which so striking a peculiarity could be ascribed.

The report is therefore distinguished into three heads; the *first*, embracing the usual medical and statistical details relating to the Dragoon Guards and Dragoons; the *second*, those relating to the Foot Guards only; and the *third*, those of the Royal Horse Guards; with some details regarding the mortality and diseases among the depôts of infantry corps serving in the West Indies.

I. The Dragoon Guards and the Dragoons may be regarded as a class of men presenting what are called well selected lives. They labour under no physical defect at the time of enlistment, and ought to be free from all evident indications of disease. They are better lodged, better fed, and have less laborious duties to perform than the majority of the labouring population. They might accordingly be expected to be less liable to the usual causes of sickliness and mortality. The following table presents a view of the annual admissions for sickness, and the number of deaths among this class of troops for the period of seven years and a-quarter.

				Ratio per 1000 of Mean Strength.	
Years.	Strength.	Admissions.	Deaths.	Admitted.	Died.
1830	6402	5527	61	863	9.5
1831	6018	6027	87	1001	14.4
1832	6408	5943	100	927	15.6
1833	6379	6301	113	988	19.3
1834	6261	5743	84	917	13.4
1835	5902	4982	81	844	13.7
1836	7241	6941	101	959	14.
Total for 7¼ Years	44611	41464	627	—	—
Average,	6166	5725	87	929	14.

This table does not exhibit a view of the whole amount of mortality; and the War-Office returns show, that, besides the deaths now mentioned from disease, another source of mortality may take place from accident, violence, and analogous causes. The following table presents a view of the numerical amount of deaths from the causes now specified.

		Causes of Death.			
Years.	Suicides.	Murdered.	Drowned.	Other Accidents.	Total.
1830	6	—	2	1	9
1831	4	—	3	—	7
1832	5	—	—	1	6
1833	5	2	3	1	11
1834	2	—	2	—	4
1835	6	2	2	2	12
1836	7	—	2	1	10
	—	—	—	—	—
Total,	35	4	14	6	59

The amount of deaths from the causes now mentioned is about 1 3-10ths per thousand of the strength annually; and when the 14 per thousand is increased by the addition now made, the annual mortality from all causes is 15 3-10ths per thousand.

This, however, is believed to be higher than the average over a longer series of years. As cholera prevailed in 1832 and 1833, and as influenza prevailed in 1833 and 1836, and as both added considerably to the mortality, and the latter must have laid the foundation of many cases of pulmonary disorders, it is inferred that the mortality was increased above its average and usual ratio in those years. It is supposed, from various well established facts, that the annual average ratio of mortality is about 2 per thousand less than the preceding estimate, that is, not much above 14 per thousand.

To frame a just idea of the high degree of this mortality, it is proper to compare it with that taking place among other bodies of human beings placed in similar circumstances. The mortality in the Prussian army, on an average of ten years, from 1821 to 1830, and which, it should be observed, consists entirely of young men between 20 and 25, was $11\frac{7}{10}$ per thousand annually, or, in other words, below 12 per thousand. The mortality of the French army, on the average of six years from 1820 to 1826, amounted to $19\frac{5}{10}$, or $19\frac{1}{2}$ per thousand annually. But, as this is supposed to include the deaths of troops serving in the colonies, less reliance can be placed on it.

Age is a most important element in ascertaining the rate of mortality. It appears that, of the whole force of Dragoon Guards and Dragoons, nearly one-third were between 18 and 25, one-third between 25 and 33, and the remaining third between 33 and 40, excepting a few boys under the age of 18. From this it results that the average age of this class of troops is between 29 and 30. By the Carlisle Tables, which, being deduced from the population of a middle-sized town, not very densely inhabited, and partaking, therefore, of the characters of a semi-rural population, may be regarded as presenting more favourable results than the tables of populous towns, the annual mortality among 1000 persons at that age is stated at 10; while the mortality deduced from the duration of life among the government annuitants is 13 per thousand. The mean of these, viz. 11.5 per thousand, corresponds very nearly with the ratio deduced from the population returns.

If this be adopted as a standard of the ratio of mortality, it might be inferred that the military profession, even under the most favourable circumstances of well-selected lives, strong physical frames, and protection, as far as is practicable, from all causes of sickliness and mortality, is injurious to the constitution, and shortens the lives of those employed in it. To a certain extent, this inference is well-founded; but it requires some examination.

It appears, in the first place, that the rate of mortality now given as a standard is so much lower than the rate of mortality in populous towns, that it must be regarded as partaking of the nature of the mortality of rural districts, in which mortality is always lower than in towns; and it appears, in the second place, that the mortality of the human race between the ages now specified in populous towns of the kind in which the Dragoons are generally quartered, is rather higher than that presented by the Dragoon Guards and the Dragoons. This will appear very clearly by the following table:—

Ages.	Per Returns in Marshall's Parliamentary Digest.									Average of York, Hull, Norwich, Plymouth, Portsmouth, and Liverpool.	Glasgow, per Statistical Society's Report.	London, from Population Returns.	General average of all these towns.
	Chester.	Leeds.	Bolton.	Bury.	Preston.	Wigan.	Bradford.	Stockport.	Macclesfield.				
15 to 20	6	7	9	9	8	8	9	9	10	7	8	Not stated	8
20 ,, 30	14	17	19	18	19	16	15	18	18	14	12	12	16
30 ,, 40	15	19	20	18	20	16	15	19	20	15.5	16	17	18
40 ,, 50	17	23	21	19	22	21	18	24	23	19.5	23	25	21

It appears from this table that the mortality of the civil population of the same towns as those in which the Dragoons are generally quartered, between the ages of 20 and 30, is 16 per thousand, being rather higher than that of the Dragoons and Dragoon Guards at the same age. It has been long known, and even established by recent observations, that rural and thinly peopled districts are much less liable to mortality than densely inhabited towns. As it is chiefly in the latter that troops are usually quartered, it is inferred by the reporter that the high mortality among this class of troops depends not so much on the deteriorating influence of their profession, as on the operation of the insalubrious atmosphere of densely peopled districts.

The prevalence of sickliness among this class of troops seems high. It appears that the number of admissions annually for the last seven years was 949 per 1000; in other words, that every man was in hospital for some disease or other, once every thirteen months. Among the workmen employed in the government dockyards, many of whom are of a much more advanced age than cavalry soldiers, the average number of admissions annually amounts only to 407 per 1000. (Vide Table No 1. Medical Intelligence.) This disparity depends principally on the fact, that among soldiers, no one is admitted without being entered in the hospital book, whereas, among the workmen of the dock-yards, cases only are recorded which are serious enough to attract attention, and require medical treatment. This is further confirmed by the fact, that, with so moderate a number of admissions as 407 per 1000, the deaths amounted to 15 per 1000.

Of the causes of sickliness and mortality some estimate may be formed from the following tabular statement.

	Admissions.		Deaths.	
	Total among whole force in 7¼ years.	Annual ratio per 1000 of mean strength.	Total among whole force in 7¼ years.	Annual ratio per 1000 of mean strength.
By fevers, ...	3327	75	60	1.4
eruptive fevers, ...	117	3	6	.1
diseases of the lungs, ...	6627	148	345	7.7
,, of the liver, ...	337	8	19	.4
,, of the stomach and bowels,	4193	94	32	.8
epidemic cholera, ...	171	4	54	1·2
diseases of the brain, ...	293	6	32	.7
dropsies, ...	55	1	14	.3
rheumatic affections, ...	2244	50	6	1.4
venereal ,, ...	8072	181	2	
abscesses and ulcers, ...	5950	133	7	
wounds and injuries, ...	5619	126	12	
punished, ...	339	8	—	
diseases of the eyes, ...	867	19	—	
,, of the skin, ...	1311	29	—	
all other diseases, ...	1942	44	38	
Total in Medical Returns,	41464	929	627	14.
By suicide, accidents, and violence,	—	—	59	1.3
Total, ...	41464	929	686	15.3

This table confirms the accuracy of the observation last made. Of the total amount of 41,464 admissions, not fewer than 26,344, or nearly two-thirds of the whole, were of that class of complaints which rarely prove so serious as to disable a person for the duties of civil life.

To contrast the relative mortality by different classes of diseases among civilians and soldiers, the following table of deaths by different classes of diseases, compiled from the records of the

Equitable Insurance Office from the year 1801 to 1832 inclusive, is given.

Classes of Diseases.	Specific Diseases.	Died by each disease.	Died by each class of diseases	Ratio per 1000 of pers. insured died by each cl. of disease an.	Ratio per 1000 of troops died by same class of diseas. as above
Fevers,	Common continued fever,	35	61	1.6	1.4
	Bilious, ...	6			
	Nervous, ...	6			
	Inflammatory, ...	5			
	Putrid, ...	9			
Eruptive fevers,	None, ...	—	—	—	.1
Diseases of the lungs,	Inflammation of the lungs,	14	122	3.4	7.7
	" chest,	2			
	Consumption, ...	86			
	Ruptured blood-vessel,	12			
	Angina pectoris, ...	8			
Diseases of liver,	... ...	—	10	.3	.4
Diseases of the stomach and bowels,	Inflammation of the bowels,	16	30	.8	.8
	Diseased stom. & indigestion,	11			
	Dysentery, ...	1			
	Cholera, ...	2			
Epidemic cholera	... ...	—	—	—	1.2
Diseases of the brain,	Water in the brain,	1	58	1.6	.7
	Brain fever, ...	19			
	Epilepsy, ...	3			
	Apoplexy, ...	29			
	Palsy, ...	6			
Dropsies,	Water in the chest,	4	14	.4	.3
	Other dropsical affections,	10			
Other diseases,	Aneurism, ...	1	24	.7	
	Erysipelas, ...	3			
	Diseased bladder, ...	3			
	Gout, ...	2			2.7
	Cancer, ...	2			
	Atrophy, ...	4			
	Anomalous, ...	9			
Accidents, &c.	Suicide, ...	3	12	.3	
	Killed in action, ...	2			
	Accidents, ...	7			
	Total, ...		331	9.1	15.3

It deserves notice in this table that the mortality by various diseases of the lungs is among the troops more than double of what it is among civilians at the same age; that in cholera it was infinitely greater, in so far as no deaths took place among the insured at all; and that the mortality from gout, cancer, atrophy, anomalous diseases, and suicide, the mortality among the Dragoons was very nearly four times greater than it was among civilians. In one class of disorders only, namely, that of diseases of the nervous system, was the mortality very decidedly less among the Dragoons than it was among civilians, being more than one-half less. In all others it was very nearly the same. From the whole table it results that the general mortality is considerably less (being only $9\frac{1}{10}$) among civilians than it is among the Dragoons; that pulmonary diseases are much less fatal among the former, and disorders of the nervous system much less fatal among the latter.

The large proportion of cases of suicide among this class of the military is a remarkable circumstance demanding serious attention, and, if possible, inquiry. Among the whole amount of 687 deaths during the space of seven years and one-fourth, not fewer than 35, or more than 1 in 20 of the whole, have been from this cause alone, independent of many attempts at suicide which did not prove fatal. Among those insured in the Equitable again, in a total mortality of 331, only 3 deaths were the result of suicide, or 1 in 110 deaths. The degree of this tendency to suicide in the army is best illustrated by comparison with the proportion of suicides in civil life in different countries, as stated by Quetelet.

In France there is annually .		1 suicide	in 18,000 inhabitants.
Prussia, . . .		1	in 14,404
Austria, . . .		1	in 20,900
Russia, . . .		1	in 49,182
State of New York, . .		1	in 7,797
Boston, . .		1	in 12,500
Baltimore, . .		1	in 13,656
Philadelphia, .		1	in 15,875
Dragoon Guards and Dragoons of the United Kingdom,		1	in 1274
Department of the Seine, includ. Paris, between	1817 and 1825,	1	in 2400
Berlin	1813 and 1822,	1	in 2941
Geneva	1820 and 1826,	1	in 3900
London		1	in 5000

It appears from these numbers that suicide is at the rate of four times at least more frequent among the Dragoon Guards and the Dragoons than in civil life in this country, and very nearly twice as frequent as it is in Paris. It is also much more frequent than among the troops generally. One cause of this tendency to suicide is thought, in the present Report, to be found in the circumstance, that the Dragoon Guards and Dragoons contain more of that class, who have, by dissipation and extravagance, reduced themselves from a higher sphere in life to the necessity of enlisting, and on whose minds this change of condition may, in some instances, operate so powerfully as to lead to self-destruction. It is quite possible that this and similar circumstances may have considerable influence in the production of the effect referred to. But it must be remembered, that suicide is always the effect of some variety of insanity; that both this and all the varieties of insanity are most common in large, populous and wealthy cities, where morals are much corrupted, and where gambling, whether in the ordinary mode, or in the great commercial speculative games, there so frequent, is practised as a profession, and where all the other causes of intense and violent mental excitement are so keenly pursued, and indulged in, with so little self-denial.

2. Of the Foot Guards the Medical Returns are not sufficiently minute to specify the number of admissions into hospital; but the following table presents the numbers and proportions of deaths among the strength for the space of seven years and one-fourth.

Years.	Strength.	Deaths.	Ratio of deaths per 1000 of mean strength.
1830	5010	88	17.6
1831	4589	108	23.5
1832	4959	128	25.8
1833	4962	98	19.8
1834	4852	103	21.2
1835	4524	85	18.8
1836	5642	135	23.4
Total for 7¼ years,	34538	745	—
Average,	4764	103	21.6

The most important circumstance here presented is, that the annual average mortality in this description amounts to $21\frac{6}{10}$ per thousand, being nearly one-half higher than it is among the Dragoons and Dragoon Guards.

The principal diseases to which this high rate of mortality is to be ascribed may be understood from the following table.

	Total deaths by each class of diseases.	Ratio of deaths annually per 1000 of mean strengths.
By fevers,	59	1.7
eruptive fevers,	10	.3
diseases of the lungs,	487	14.1
liver,	2	.1
stomach and bowels,	24	.7
epidemic cholera,	40	1.2
diseases of the brain,	37	1.
dropsies,	18	.5
other diseases,	47	1.4
causes unknown,	9	.2
suicide and accidents,	12	.4
Total,	745	21.6

By comparing the numbers here presented under the head of the different diseases, with the corresponding numbers presented by the table relative to the Dragoon Guards and Dragoons, in page 455, it results that the excess of mortality among the Foot Guards, above remarked, arises entirely from the greater prevalence of diseases of the lungs. The ratio per thousand of deaths by diseases of the lungs, is among the

	Foot Guards.	Dragoon Guards and Dragoons.
	14.1	7.7
The ratio in other diseases,	7.5	7.6
	21.6	15.3

It thus appears that the mortality from diseases of the lungs among the Foot Guards is double of that from the same cause among the Dragoon Guards; and it may therefore be inferred that diseases of the lungs are also greatly more prevalent among the former than among the latter class of troops.

This high prevalence of pulmonary disorders among the Foot Guards is supposed not to be a necessary consequence of residence in the metropolis; because, it is argued, the bills of mortality show that among 1000 deaths taking place among the civil population only 328, or less than one-third, are the consequence of diseases of the lungs; and because among the Household Cavalry, another class of troops also quartered in the metropolis, it is afterwards shown, no such peculiarity exists. It is, therefore, inferred that this high rate of mortality by pulmonary disorders originates in some peculiarity in the moral or physical condition of this description of troops, from which the others are comparatively exempt.

What this peculiarity may be it is not stated in the present Report. Two causes, it occurred to us, might be to some extent concerned in the production of the effect. The first is the night duty, or, to speak more accurately, exposure to cold during night duty, to which the Foot Guards are, perhaps, in a greater degree, subjected than the mounted household troops. But we find that the influence of this cause is afterwards noticed, and reduced to very moderate dimensions, by the fact, that, among the troops of the line serving at home, the vigour of whose constitutions has in some instances been impaired by residence in tropical and unhealthy climates, and who have an equal share of night duty to perform, the mortality by diseases of the lungs is much less considerable.

The second cause to which it appeared to us reasonable to ascribe considerable influence in favouring the prevalence of diseases of the lungs, is the practice of overheating the men in the course of exercise or drill, and allowing them in this state often to stand so long, according to the mistaken notions of discipline, while a chill wind is blowing on them, that they are suddenly and completely chilled, and in this state attacks of pneumonia, bronchitis, or pleurisy often succeed. Of this cause no notice is taken; and perhaps we overrate its influence as to this peculiar class of troops. But even were this not entirely and peculiarly applicable to the regiments of Foot Guards, no one who has seen an infantry regiment subjected to drill or exercise on what is termed a Field-day, will deny, that the alternate excessive heating and chilling in a climate such as this, is as perfect a prescription for inducing pulmonary disorders of every description as can well be contrived. When regiments are brought out for review, or are even subjected to drill, it is often forgotten, amidst the brilliant and imposing appearance of well-accoutred and well-armed troops, that they are only human beings, with lungs and hearts, with skin, mucous membrane, and blood-vessels; and that they can no more than their civilian fellow-creatures endure with impunity the extreme vicissitudes of heating and chilling. These inconveniences of excessive heating and chilling are manifestly, it must be observed, the effect of the rules of the service. If a workman or labourer is overheated in the course of his work, he takes care not to stand perfectly inactive until he cools, or to remain so long exposed to a cold wind as to chill himself thoroughly; and he has generally some opportunity of preventing the sudden transition from violent exercise to total inaction. But the soldier, by the rules of the service, must obey his commanding-officer, and not work or be inactive according to his own feelings, but according to the ideas formed by his superior.

That this is no imaginary cause of the formation of pulmonary disorders among soldiers, is, we conceive, amply established by what we have learned of the causes of sickliness and bad health among volunteers during the time that that description of force was fashionable. In many instances these persons, who were all civilians, and in whom attacks of rheumatism, chronic catarrh, hæmoptysis, and pulmonary consumption formed a considerable amount, we have been informed, of their disorders, the origin of their complaints was almost invariably ascribed to exposure to cold during drill, or after being overheated by military exercises.

But it must not be denied, that, even with the admission of the full influence of the causes now specified, the high mortality of the Foot Guards by pulmonary disorders cannot be fully explained. Even in the troops in the West India Depôts, the mortality from all disorders has been during the same period of seven years not more than 18.5 per thousand, and diseases of the lungs have produced not more than 9.6 per thousand, or a little more than the half of the whole mortality; (Vide Table, No. 2 and 3, Medical Intelligence,) while, as already stated, that of the Foot-Guards by pulmonary disorders amounts to two-thirds of the whole mortality,—14.1 upon 21.6 per thousand. These facts are sufficient to show, that for this great prevalence of pulmonary disorders, and mortality caused by them, in the Foot-Guards, no adequate cause is yet assigned.

3. The Household Cavalry consists of one regiment of Royal Horse Guards, (the Blues,) and two Regiments of Life Guards. The following table presents a view of the annual number and

proportion of deaths among the strength for seven years and one-quarter, from January 1830 to March 1837, inclusive.

Years.	Strength.	Deaths.	Ratio of deaths per 1000 of mean strength.
1830	1138	14	12.3
1831	1155	19	16.4
1832	1218	23	19.
1833	1202	23	19.
1834	1198	18	15.
1835	1217	11	9.
1836	1521	17	11.2
Total for 7¼ years,	8649	125	—
Average,	1193	17	14.5

Of the different diseases by which this mortality is induced, an idea may be formed by the following table:—

	Total deaths by each class of diseases.	Annual ratio of deaths per 1000 of mean strength.
By fevers,	14	1.6
eruptive fevers,	2	.2⅓
diseases of the lungs,	70	8.1
liver,	4	.5
stomach and bowels,	2	.2⅓
epidemic cholera,	11	1.3
diseases of the brain,	8	.9
dropsies,	2	.2⅓
all other diseases,	7	.8
suicides and accidents,	5	.6
Total,	125	14.5

It thus appears that the total mortality among the Household Cavalry is only 14½ per thousand, which is rather less than the average annual mortality of the troops of the line in the United Kingdom in years of ordinary health, viz. 15 per thousand, and 1.3 per thousand less than the mortality among the Dragoon Guards and Dragoons, from the united effects of diseases and accidents.

The greatest amount of this mortality, further, is occasioned by pulmonary diseases, which are represented by 8.1 per 1000 annually of the whole mortality, which is higher than the mortality among the Dragoon Guards and Dragoons from the same cause, but lower than that among the depôts of corps serving in the West Indies. We have here, therefore, a progressive increase in the amount of pulmonary disorders in the different descriptions of troops, and which may be stated in the following order:

	Mortality from pulmonary diseases.	Total mortality.
In the Dragoon Guards and Dragoons,	7.7	15.3
Household Cavalry, .	8.1	14.5
West India Depots, .	9.6	18.5
Foot Guards, . .	14.1	21.6

When it is observed from these numbers, that the highest proportion of mortality produced by diseases of the lungs, in relation to the total mortality, takes place in the Household Cavalry, and in the Foot Guards, it seems reasonable to infer, that residence in the metropolis, and the peculiar duties of that station, must have some influence in the production of the effect. The reporter is disposed to consider the high degree of mortality from pulmonary disorders among the Foot Guards as an exception. But it is not easy to discover on what principle or ground it can be viewed in this light; since the result depends as much on correct numerical statements as any other.

Nearly four-fifths of the fatal cases of pulmonary diseases in the army arise from consumption, being as many as from all other causes in the army at home. The highest estimates in civil life rate the mortality from this disease at a seventh part of the deaths at all ages; and if the observation be confined to adults alone, it is supposed that it may amount to a fourth part, being at the utmost only half as high as among the troops. In the army the ages may be stated in general terms at between 18 and 40; and this does not diminish the great proportion in which this disorder prevails. It may be further observed, that, as the disease is in this class of persons almost invariably inflammatory in origin, or the result of neglected cold, or neglected pneumonic or bronchial inflammation, the great degree in which these disorders prevail, shows clearly the influence of military duties in inducing inflammatory disorders in the lungs.

From various documents it is calculated, that the number constantly sick among the Dragoon Guards and the Dragoons in the United kingdom, amounts on an annual average to 37 per 1000 at least; and if allowance be made for omissions by not returning cases of sickness in detachments without any medical officer, it is computed that the proper average may be stated at 40 per 1000. This corresponds with the result of 24 monthly musters in 1823 and 1824, referred to by Mr Finlaison in his evidence on Friendly Societies. The number constantly sick in the Prussian army on an average of ten years amounted to 44 per 1000. The average number of sick at all times in the infantry is estimated at 50 per 1000. From all these facts, and others formerly stated, regarding the proportion of admissions, it results that each soldier is about

14½ days on an average in hospital, and that the average duration of each attack of illness is sixteen days.

Among the Dock Yard labourers at Portsmouth, each attack lasted thirteen days; and among the East India Company's labourers in London, each attack lasted from eighteen to twenty-two days.

The influence of age in determining the mortality of bodies of men is, it need scarcely be said, considerable; and the importance of ascertaining it in some degree for this country, in order to estimate its influence on mortality in foreign stations, is too obvious to require being proved. Of this, some idea may be formed by the following tables of the numbers of soldiers who died at different periods of life, amounting to 663 between 1st January 1830, and the 31st December 1836.

Of these there died under 18 years of age, .	2
,, ,, 18 to 25, - -	213
,, ,, 25 ,, 33, - -	222
,, ,, 33 ,, 40, - -	148
,, ,, 40 and upwards, -	78
Total, -	663

Ages.	Aggregate strength at each age in returns of 7 years.	Total deaths at each age in returns of 7 years.	Annual ratio of deaths per 1000 living at each age.
Under 18, -	455	2	4.4
18 to 25, -	15320	213	13.9
25 ,, 33, -	15919	222	14.
33 ,, 40, -	8549	148	17.3
Above 40, -	2920	78	26.7
Total, -	43163	663	15.3

If attention be confined to the first table, it might be inferred that the greatest mortality is between the ages of 18 and 33, because between these ages the greatest numbers of deaths appear in the table. But by examining the second table, in which the number or strength is also stated, these large lists are reduced to their proper dimensions by proportion. As this table shows that while the number of the force rather diminishes after the age of 33, or, in other words, that the number of men in the service above that age is greatly less than of those under that age,—the number of deaths does not decrease, it results that, in the proportion of mortality, there is a steady progressive increase as life advances, until the proportional mortality above the age of 40 is very nearly double of what it is between 18 and 25.

Among the Foot Guards results a little different are presented, as may be seen by the subjoined table.

Ages		Aggregate strength at each age in returns of 7 years.	Total deaths at each age in returns of 7 years.	Annual ratio of deaths per 1000 living at each age.
Under 18,	-	490	3	6.1
18 to 25,	-	11778	263	22.3
25 ,, 33,	-	12470	280	22.5
33 ,, 40,	-	6637	118	17.7
Above 40,	-	2035	56	27.5
		33410	720	21.6

It is here remarkable, that the mortality falls in a heavier proportion between the ages of 18 and 33 in the Foot Guards, than in the Dragoon Guards and Dragoons, and at this period of life than at the subsequent period between 33 and 40; whereas at the latter period the mortality among both classes of troops is very much the same. It cannot be doubted that the high rate of mortality here noticed, as taking place between the ages of 18 and 33, is intimately connected with, if not wholly attributable to, the great prevalence of pulmonary disorders among this class of troops.

That this cannot be ascribed to the mere influence of the climate of the metropolis, is believed to be established by the fact, that no peculiar mortality of this kind is to be observed at the same period of life, either among the population of the metropolis in general, or among the East India Company's labourers; a numerous body of men constantly employed in London, and whose medical records have been preserved with great care. This is presented by the following table.

Ages.		Died annually per 1000 of living.		
		By London Bills of Mortality.		By Returns of East India Company's Labourers.
From 20 to 30,	-	12.2	-	8.2
,, 30 ,, 40,	-	16.9	-	14.8
,, 40 ,, 50,	-	25.4	-	24.3

To the subject of night duty, which might be imagined to exercise considerable influence, we have already adverted. It is believed, however, that this is equally inadequate to account for the facts, for two reasons, *first*, that night duty devolves upon men above 33 as well as below it; and *secondly*, that in the Metropolitan Police, who, it is argued, have equally severe night duty to perform, neither the mortality nor invaliding is one-half so high as in the Foot Guards.

The returns for the Household Cavalry, though serving in the metropolis also, present a lower degree of mortality at an early period of life, but a steady and progressive increase with the advance of age.

Ages.	Aggregate strength at each age in returns of 7 years.	Total deaths at each age in returns of 7 years.	Annual ratio of deaths per 1000 living at each age.
Under 18,	119	1	8.4
18 to 25,	2928	43	14.7
25 „ 33,	2892	34	11.4
33 „ 40,	1836	30	16.3
Above 40,	570	13	22.8
	8345	121	14.5

The chief conclusion deducible from these numbers is, that the progressive increase with advancing age is so considerable, that, though it be a little higher between 18 and 25 than it is between 25 and 33, it is above 40 exactly double of that which takes place between 25 and 33.

The influence of season is the next subject of investigation. The following table shows that the most numerous admissions take place in August and September, and the greatest number of deaths in May, August, and September.

	Admissions. By acute diseases only.	Deaths. By acute diseases only.
January,	85	68
February.	76	49
March,	71	80
April,	77	72
May,	88	117
June,	84	80
July,	88	91
August,	107	110
September,	93	98
October,	81	83
November,	70	76
December,	80	76
	1000	1000

" Notwithstanding the large proportion of diseases which are attributed to the changeable nature of this climate, the attacks of sickness are fewest among the troops during the fogs and gloom of November, and throughout the winter they are considerably under the average, even though, from their professional duties, soldiers are much exposed to its severity; while during the months of July, August, and September, when there exists that mild and serene atmosphere which *à priori* might be supposed most conducive to health, the proportion of sickness generally attains its maximum. The same feature will hereafter be shown to exist to a still greater extent in America, and other regions of the northern temperate zone. April and May seem also to prove peculiarly fatal to chronic cases among the troops in this kingdom; but at least nine-tenths of these are from consumption, and the influence of spring in accelerating the course of that disease has been often the subject of remark by medical writers."—P. 21.

The autumnal months of the years are manifestly the most insalubrious to soldiers; and it is equally remarkable, that they are in civil life the least insalubrious, or rather the most favourable.

II. We should now enter on the Report on the Sickness, Mortality, and Invaliding of Troops in the Mediterranean; following the order in which the reports of the different stations are given, viz. Gibraltar, Malta, and the Ionian Islands. We find, however, that our limits will not permit us to enter into this subject in a manner capable of doing it justice; and, indeed, it is almost impossible in an article like the present to give an analytical view of the various results furnished by the Report, without reprinting large portions of it. After the foregoing account, therefore, as an example of the kind of information furnished, we shall merely subjoin the General Deductions, recommending at the same time attention and diligent perusal of the Report to all those who wish to understand the rates of sickness and mortality in the different stations, and the causes by which these are probably influenced. From the Report on the Mediterranean stations, the following deductions on the influence of the climate of the Mediterranean, on the production, frequency, and progress of pulmonary disorders, and on the prevalence and supposed or alleged causes of fever, deserve particular attention.

"As the preceding results tend to render questionable many of the theories regarding the influence of certain climates and localities in inducing some diseases, and modifying the operation of others, it may be necessary here to take a brief review of the information which has been obtained on that subject in the course of this investigation.

"The mild climate of the Mediterranean, for instance, has generally been considered favourable to the cure or prevention of consumption and other pulmonary affections. To ascertain whether this supposition is well founded, or the reverse, is manifestly an object of much importance to medical science, and can only be determined by investigations extending over a long series of years, and including large masses of individuals. The experience of civil practitioners, however carefully recorded, is on too limited a scale to warrant general conclusions on a subject of such magnitude; yet, hitherto, no other source of information has been available for that purpose, and it is not surprising, therefore, if their conclusions, when submitted to the test of numerical calculation, are, in many instances, found to be erroneous.

"In no way can the relative influence of climate in inducing any particular disease in different countries be more accurately estimated than by a comparison of the proportion attacked annually out of a given number of individuals resident in each. If we apply this test to the Mediterranean stations, by investigating the relative prevalence of consumption among the troops there and in the United Kingdom we obtain the following results.

	Aggregate Strength of 7 Years from 1830 to 1836 inclusive.	Total Attacked by Consumption in these 7 Years.	Ratio per 1000 of Mean Strength attacked annually.
United Kingdom,	43,163	286	6.6
Gibraltar, .	22,868	187	8.2
Malta, . .	15,031	101	6.7
Ionian Islands, .	24,401	129	5.3

"We have already alluded to this subject in a more general way, in the course of our observations on diseases of the lungs in each of the Mediterranean Commands, but we can now speak with more certainty from results extending in each instance over the same seven years, and embracing a large number of individuals of the same profession, the same age, the same habits, and having, except at Gibraltar, the same diet. This affords so accurate a standard of comparison as to place beyond a doubt the interesting fact, that, except in the Ionian islands, the liability of troops to consumption in the Mediterranean stations is even greater than in the United Kingdom. We have not compared the deaths by consumption for a similar period, because conclusions could not have been drawn in regard to the relative mortality with the same accuracy, so many labouring under that disease having died on their passage home or after their arrival in this country; but from all the information we have been able to obtain there can be no doubt that, if due allowance is made for these casualties, the proportion of deaths also, among those attacked by consumption, will be found fully as high in the Mediterranean as in the United Kingdom.

"We might have carried this comparison further, and shown how little influence temperature has on this disease by the fact that it is still more prevalent and fatal in the Mediterranean than in North America, where the soldier has frequently in the course of his duty to be exposed to the night air, when the thermometer is several degrees below zero; but we defer entering on any more extensive comparison of this kind till we have an opportunity of adducing evidence on that subject in a more detailed form.

"These facts offer a striking contradiction to the popular idea regarding the influence of sudden atmospherical vicissitudes, and rapid alternations of temperature, in inducing this disease; but it is even more remarkable that similar results should be obtained in regard to the relative prevalence and mortality by pleurisy and inflammation of the lungs, which are supposed to be still more influenced by these agencies :—

Stations.	Aggregate Strength 7 years from 1830–1836 inclusive.	Total attacked by pleurisy & inflam. of lungs in same period.	Total died of these diseases in same period.	Ratio per 1000 of force attacked annually.	Ratio per 1000 of force died annually.
Great Britain,	43,163	720	37	17	.9
Gibraltar, .	22,868	655	13	29	.6
Malta, . .	15,031	456	28	30	1.8
Ionian Islands,	24,401	556	30	23	.9

"Here, then, we find that inflammatory affections of the lungs are nearly twice as prevalent in the Mediterranean as among the same number of troops in the United Kingdom, and that in the mild climate of Malta they are also twice as fatal.

"These facts, combined with a careful examination of the Abstracts in the Appendix, lead to the inference that residence in the Mediterranean, though so often recommended to patients labouring under pulmonary affections, is by no means likely to be attended with beneficial results. In some cases, no doubt, change of air, change of scene, and the sea voyage, may have benefited a patient, and led to a partial recovery; but the same would in all probability have taken place wherever he had been sent, it being by no means likely that any beneficial influence can be exerted by the climate itself, when a body of selected soldiers, subject to no severe duty, and exposed to no hardship, lose annually a larger proportion of their number by consumption than in the United Kingdom. This inference, however adverse to generally received opinions, is strikingly corroborated by the prevalence of consumption and other pulmonary affections among the civil inhabitants of Malta, as shown in Appendix, No. III. of this Report.

"The average number of pulmonary affections during the last seven years is certainly not too favourable a standard of comparison for the climate of the United Kingdom, as they have been more frequent than usual, owing to the influenza having twice prevailed to a great extent among the troops. The results for the same period may be supposed, however, to afford a fairer average for the Mediterranean, where that epidemic was not so prevalent.

"The only point wherein this comparison may be deemed defective is, that the results for the Mediterranean refer to infantry only, while those for the United Kingdom refer to the cavalry. There are no means, however, of remedying this defect by ascertaining the prevalence of these diseases in this country among infantry alone, because in all regiments of the line, or their depôts, so many constitutions have been deteriorated by foreign service, that all the sickness and mortality could not be fairly attributed to this climate; and the Foot Guards, though they have had no foreign service for the last 20 years, appear to suffer so much from the duties, or the dissipation of the metropolis, to which the sphere of their service is for the most part confined, that any results drawn from their returns would form a still more unsuitable comparison. The cavalry, who seldom serve out of the kingdom, and are equally dispersed over it, appear under these circumstances to offer the best standard, and this has accordingly been adopted.

"The results in this report, as to the relative prevalence of fevers of the remittent and intermittent type in each of the Ionian Islands, afford strong confirmation of the doubts expressed in the West India Report regarding the uniform agency of emanations from a marshy soil or excessive vegetation in the production of those diseases; for, though sometimes more prevalent in the vicinity of such causes, yet we find that in the rocky, barren, and rugged islands of Vido, Ithaca, and Cerigo, they are more common than at Corfu, where these supposed sources of fever abound. This cannot altogether be accounted for by supposing exhalations to be wafted from any other island, because the geographical position of Cerigo places it completely beyond the reach of any such source of disease, and even the other two are beyond the distance to which, according to most authors, malaria in a concentrated form is likely to be conveyed.

"In some colonies where remittent fever prevails, particularly the West Indies, it has been attributed to excessive moisture, because there the unhealthy and the rainy seasons happen to correspond. If, however, we are to consider the yellow fever of the West Indies and the Mediterranean so far similar as to be produced by the same agencies, we have a striking contradiction to the effect of moisture as an exciting cause, in the fact that in the Ionian Islands this disease always appears and prevails at the period when there is least rain. On reference to the table at p. 31 of this report, showing the days on which rain fell in the Ionian Islands, it will be found that from June to October, when remittent fever was most prevalent, the rainy days were not one-third as numerous as during the rest of the year, and so great was the drought in August, when that disease generally attains its maximum prevalence and severity, that it only rained six times in the course of ten years; we are aware that the absence of rain cannot always be assumed as a proof of the non-existence of moisture in the atmosphere, but from the want of hygrometric observations we possess no other criterion by which to estimate the presence of that supposed agency.

"The emanations from decayed vegetation have also been assigned as another of the agencies to which this disease owes its origin in some colonies. Here, however, we find that it generally appears in the beginning of June, when vegetation is yet in luxuriance, and diminishes in September, when vegetation has become scanty and, from the fall of rain combined with the approach of winter, is rapidly hastening to decay.

"The uniformity with which remittent fever makes its appearance in the Ionian Islands, during the month of June, is certainly a very remarkable feature in this disease, and would, to a superficial observer, appear to indicate that it depended principally on temperature; but this conclusion is rendered extremely questionable, not only by what we already know in regard to the statistics of that disease in the West India colonies, but by the fact that on the average of ten years, from 1820 to 1830, when fever was exceedingly prevalent and fatal in the Ionian Islands, the mean temperature in the month of October, when it had materially declined, or assumed a very modified form, was but two degrees lower than in the month of June, when it generally commenced, and in some instances raged with considerable violence. If we refer to its appearance in Gibraltar, too, we find that it has never shown itself there to any extent, except towards the middle of September, by which period the thermometer has sunk some degrees below its maximum range; and throughout the south of Spain this epidemic is always at its height about the middle of October, when the temperature has undergone a still further reduction.

"Taking a general view of this question, we must suppose that if it depended on a high range of temperature alone it would always be most prevalent in those years when that was greatest, whereas the reverse has been frequently observed. In that case, too, all stations in the vicinity should be equally affected, instead of which we often find the fever extremely prevalent at one of the Ionian Islands, while at another, though adjacent and subject to the same or a still higher temperature, the troops are comparatively exempt.

"Similar considerations on the subject of fever will be found more fully discussed in the West India Report, where there existed a wider field of observation. The origin of that disease may long baffle research, but an important step in the inquiry will have been gained by thus establishing that none of these agencies sufficiently account for its existence and operation."—Pp. 63–65.

III. The third Report relates to the Sickness, Mortality, and Invaliding of the Troops in British America.

From the various tabular statements and other facts furnished by this Report, the following deductions are made. The observations on the prevalence of rheumatic disorders well deserve attention, as a means of illustrating the etiology of that disorder.

"Having, in the course of this report, frequently adverted to the uniform degree of prevalence which, notwithstanding the dissimilarity of climate, has been found to exist in the proportion of pulmonary affections in Nova Scotia and Canada, compared with Malta and Gibraltar, it seems unnecessary here to recapitulate the evidence on that subject; but it may be proper to inquire whether there exists, in the moral or physical condition of the troops in the Mediterranean and American stations, any difference likely to have influenced the results on which that comparison has been founded.

"In the last section of the West India Report we showed that these diseases, even under the high temperature of the tropics, prevailed to a greater extent than in the United Kingdom. But it may be argued that several circumstances, independent of climate, were there in operation to induce that peculiarity; for instance, the innutritive qualities of the diet, the limited and defective state of the barrack accommodation, and the general prevalence of intemperance, were all causes tending to affect the health of the troops in no inconsiderable degree. We are, therefore, led to inquire whether any deteriorating circumstances of a similar nature exist in the Mediterranean from which the troops in North America are exempt, and by which the tendency to these diseases may have been so far aggravated as to counterbalance the advantages otherwise resulting from its mild and equable climate.

"So far, however, from this being the case, every circumstance has been more favourable to the troops in the Mediterranean. The barrack and hospital accommodation, in Malta and Gibraltar at least, is not only of a more substantial nature than in Canada and Nova Scotia, but nearly double the space is allotted to each soldier; the diet, with the exception of a greater issue of salt meat in Gibraltar during the winter months, is nearly the same, and the meals are regulated on similar principles. Intemperance, to which so much has been attributed as an exciting cause of these diseases, cannot be said to prevail to a greater extent in the Mediterranean than America, where the constant use of ardent spirits is likely to prove still more prejudicial than the low wines which form the principal medium of intoxication in the Mediterranean.

"In all these respects, then, the troops in the Mediterranean have decidedly the advantage. We have yet to advert to another circumstance no less favourable to them. Consumption, the most fatal of this class of diseases, is supposed to affect persons at an early period of life more than those of mature age. Now, owing to the frequency of desertion in North America, so many recruits have to be sent out from this country that nearly one-half of the force there is under 25 years of age, while in the Mediterranean, where no such necessity exists for large drafts from the depots, the proportion under that period of life is only from a third to a fourth of the whole; consequently the composition of the force in the Mediterranean renders it much less subject to the influence of consumption, if not also of the other pulmonary diseases which frequently precede it.

"When we find, notwithstanding all these circumstances apparently so favourable to the greater development of these diseases in Canada and Nova Scotia, that the troops there do not suffer from them to a greater extent than in the Mediterranean, it would manifestly be incorrect to attribute their prevalence in North America to the reduced temperature and sudden atmospherical vicissitudes incident to that quarter of the globe, seeing that the sufferings of the troops from these diseases are equally great in other climates where no such causes are in operation to induce them.

"We have been thus particular on this head, because in the reports from the different medical officers in North America, we find a great portion of the sickness and mortality attributed to the severe and changeable nature of the climate inducing pulmonary affections of various kinds. It is true that many of the deaths arise from these diseases; but in this respect the troops there are by no means singular in their sufferings, for, throughout the wide extent of the British Colonies, few stations can be found where soldiers are not affected by them in an equal degree, though perhaps, owing to the greater extent of mortality by other diseases, these are less a subject of observation or remark. In addition to the instances already adduced on that head it will be shown, in a future report, that even in the mild climate of the Mauritius, more soldiers are attacked by consumption, and nearly as many by inflammation of the lungs, as in the most inclement regions of North America, though we do not find that the prevalence or fatal character of these diseases attracts so much attention.

"The caution necessary to be exercised in attributing to certain peculiarities of climate the prevalence of any class of diseases, is so strikingly exhibited by the proportion of rheumatic affections ascertained to have occurred among the troops in different colonies, that the following abstract will best serve to illustrate our observations on this head:—

	Jamaica.	Nova Scotia and New Brunswick.	Bermudas.	Malta.	Ionian Islands.	Gibraltar.	Canada.	Mauritius.	Windward & Leeward Command.	United Kingdom.	Cape of Good Hope.
Admissions from Rheumatic affections annually p. 1000 of mean strength,	29	30	33	34	34½	38	40	46	49	50	57

"Thus we find that in the mild and equable climate of the Mediterranean or the Mauritius, the proportion of rheumatic affections is even greater than in the inclement regions of Nova Scotia and Canada, and that, though some of the provinces of the Cape of Good Hope have occasionally been without rain for several years, these diseases are more frequent in the dry climate of that command, than in the West Indies, where the condition of the atmosphere is as remarkably the reverse; yet have extreme cold and atmospheric vicissitudes, coupled with excess of moisture, been assigned as satisfactory causes for their prevalence.

"Considering that medical officers have hitherto possessed no means of comparing the influence of such diseases in different climates, any erroneous impressions which may be entertained on that subject need not excite surprise. The information now collected, in regard to those prevalent among troops in every colony, will best serve to counteract such impressions, and afford a surer basis for future theories on that subject.

"The results of this report, in regard to the relative prevalence at different stations in British America of remittent and intermittent fevers, add still further to the difficulty of establishing any uniform connexion between the presence of marshy ground, and the existence of those febrile diseases to which the exhalations from it are supposed to give rise. As it was formerly shown that, in some of the Ionian Islands, totally destitute of marsh and comparatively barren of vegetation, more remittent and intermittent fevers have been under treatment among the troops, than in others where these alleged sources of disease existed in the greatest abundance; so in the present report we find it established, that yellow fever of the most aggravated form has repeatedly made its appearance at Ireland Island in the Bermudas, a rocky barren spot only a few hundred yards in breadth, containing no marsh, and with little or no vegetation except a few cedar-trees.

" Conversely, again, we find that these diseases prevail to a remarkable extent along the banks of the lakes, and the margin of the streams in Upper Canada, while they are comparatively rare in similar situations in the Lower Province; that among the troops at Fredericton, living on the marshy banks of a river, surrounded by dense vegetation, scarcely a case of them is ever known, and that a similar exemption is enjoyed even by those at Annapolis and Windsor in Nova Scotia, though quartered at the embouchure of rivers daily subject to extensive inundations, and of which the banks, for the distance of several miles, exhibit that combination of mud, marsh, and decayed vegetation, which is generally supposed a most prolific source of febrile diseases.

" When, in subsequent reports, we come to investigate the operation of these diseases, on the West coast of Africa and other colonies, we shall be able to adduce still more satisfactory evidence on this subject; in the meantime, we have felt it our duty to place the preceding facts in a prominent point of view—not for the purpose of establishing any particular theory, but to show how inadequate, in many instances, is the supposed influence of emanations from a marshy soil to account for the origin of these diseases. All the evidence obtained seems only to warrant the inference that a morbific agency of some kind is occasionally present in the atmosphere, which, under certain circumstances, gives rise to fevers of the remittent and intermittent type; and that though the vicinity of marshy and swampy ground appears to favour the development of that agency, it does not necessarily prevail in such localities, nor are they by any means essential either to its existence or operation.

" Notwithstanding the doubt in which this branch of the investigation is still involved, we may venture, from the facts adduced in all the reports hitherto submitted, also to draw the conclusion, that when this morbific agency manifests itself in the epidemic form, its influence is frequently confined to so limited a space as to afford a fair prospect of securing the troops from its ravages, by removal to a short distance from the locality where it originated. The history of the epidemic fevers at Gibraltar furnishes several remarkable instances of this kind, and we have also shown that, both in the West Indies and Ionian Islands, one station has frequently suffered to a great extent from yellow fever, while others within the distance of a few miles have been entirely exempt. In the epidemic cholera at Montreal and Halifax, which seems to have been in this respect somewhat analogous in its operation, we have also had occasion to remark the sudden cessation of the disease immediately on the removal of the troops even to a short distance.

" Instead of entering, therefore, into any discussion as to the causes which seem thus to limit the range of these epidemics to particular localities, we shall merely call the attention of medical officers to the fact, that, on the outbreak of any serious disease of that nature, they may forthwith take into consideration the expediency of removing the troops from the locality where it originated, a measure which, whenever camp equipage can readily be procured, or the necessary accommodation obtained for them, is likely to be attended with but little temporary inconvenience, and may probably lead to the happiest results. We are aware that this suggestion is by no means a new one, having already been made and acted upon in various colonies, and we only advert to it now, for the purpose of bearing testimony to its apparent efficacy, and encouraging the adoption of it whenever circumstances will permit."—Pp. 44–46.

In the Medical Intelligence are inserted several of the most important of the tables from which these deductions are formed.

We need scarcely add, what we have already said on a former occasion, that the publication of these Reports, by presenting a most extensive collection of facts and results, cannot fail to be extremely useful in illustrating and rectifying many of the prevalent doctrines on the nature, relative frequency, and causes of disorders.

ART. III.—*Outlines of the Diseases incident to Pregnancy and the Puerperal State.* By FLEETWOOD CHURCHILL, M. D., Licentiate of the King and Queen's College of Physicians in Ireland, Lecturer on Midwifery in the Richmond Hospital School, Physician to the Western Lying-in-Hospital, &c. 8vo. Dublin, 1840.

IN a former Number of this Journal, (Vol. l. p. 503,) we gave a short critical notice of Dr Churchill's work "On the Principal Diseases of Females." The present volume is a sequel to that work, and contains a description of the different diseases of pregnancy and the puerperal state. The treatise previously published was confined, as may be seen in the notice to which we have referred, to the diseases of the external and internal female organs of reproduction in the unimpregnated state; so that in the two volumes conjointly, is presented a complete disquisition on the maladies incidental to the other sex.

The diseases peculiar to pregnancy are seldom of a dangerous or fatal character. They are often, however, productive of great inconvenience, suffering, and distress, and keep the patient in a state of broken health and inactivity for weeks and months together. The general practitioner is often called upon to interfere medically in such cases, and he not unfrequently finds the complaints to which we allude baffling his best efforts, and very slightly amenable to the means by which he endeavours to subdue them. This want of success we are inclined to attribute, not less to the routine, the symptomatic, and the empirical practice generally followed in the treatment of these ailments, than to the neglect of accoucheurs in regard to studying the nature and treatment of these diseases in accordance with the inductive spirit of modern pathology.

Dr Churchill undoubtedly possesses, in a very superior degree, the power of analysing and condensing the existing stock of scattered knowledge and observation on particular subjects of his own department of the profession, to which he directs his attention. The various isolated essays which he has published, in our own and in other contemporary journals, on subjects connected with obstetric medicine, display this talent in a high degree, and when combined, as it evidently is in Dr Churchill's case, with the faculty of original and accurate observation, it cannot but be expected that he should have produced, as in the volume under review, a work distinguished by the learning which it exhibits, and by the very complete and practical histories which it contains of those diseases of which he professes to treat.

The author commences the First Part of his work with two instructive chapters on the usual local and constitutional consequences of pregnancy, and on the general management of pregnant females. He afterwards proceeds to discuss the history and treatment of the different disorders of pregnancy under three heads, viz.

1. Local Diseases of the Sexual System, as œdema of the labia, pruritus of the vulva, vaginal leucorrhœa, discharge of watery fluid from the vagina, dropsy of the amnios, hysteritis, &c.
2. Disorders consisting in sympathetic irritations in the chylopoietic, circulating, respiratory, and nervous systems; and
3. Disorders arising from mechanical pressure or distension, as hernia, hæmorrhoids, spasms of the ureters, incontinence of urine, dysuria, cramps, varicose veins, œdema, ascites, &c.

The different chapters devoted to these several subjects are written in a style so concise and practical, that it would be useless to attempt an analysis of them. We shall, therefore, we believe, best exhibit to our readers the general tenor and execution of the work by giving a specimen of one of these chapters. We select the one on Rheumatism of the Pregnant Uterus, not on account of its being superior in its execution to the others, but rather because it treats of a subject which has hitherto been very little studied by British accoucheurs. We may premise, that we omit the long and learned foot-notes which are attached to this and to all the other chapters of the work.

"Rheumatism attacking the pregnant uterus has been very slightly noticed in these countries, though on the Continent it has been observed and described by several distinguished individuals. Both Alphonse le Roi and Chambon seem to have observed it, but from them it did not receive that attention which it deserved. In Germany it has been described by Wigand, Carus, Schmidtmuller, Joerg, Velten, Haase, Betschler, Henne, Busch, and Witcke. M.

Dezeimeris has published a very able paper in a late number of a French periodical, (the Journal de l'Experience for May and June 1839), in which he quotes cases and analyses the labours of his predecessors. Of his researches I shall freely avail myself in this chapter.

" 'Rheumatism,' " says Wigand, " 'may attack the fibres of the uterus, as well as the muscles and their sheaths, marking its presence, as in other parts, by pain, the effect of which is to impede the contractility and motion, by increase of heat, swelling, &c. Along with rheumatism of the uterus, there sometimes exists a general affection of the same nature; but more frequently the uterus, its appendages, and the organs immediately surrounding it, are affected, owing to its great irritability during gestation.'

" It may occur at any period of gestation, but is much more frequent towards the termination, when the uterus has acquired its maximum distension. There can be but little doubt that many examples of what are called false pains, are in truth instances of this rheumatic affection of the womb. (*Dezeimeris.*)

" *Causes.*—Probably the principal of these is cold, acting upon an organ whose nervous power, and consequent irritability has been so greatly increased. It has been especially noticed, that the figure of pregnant females, by projecting the clothes from the lower part of the body, is a peculiar cause of cold. (*Wigand, Joerg, Busch.*) The disease was remarked by Velten during a general epidemic of rheumatism.

" *Symptoms.*—If the attack be mild, the patient will complain of sudden shooting pains in the region of the uterus, coming on in paroxysms, with intervals of more or less complete ease. In some cases the spasm is limited to a small space; in others it affects the organ generally.

" If it be more severe, it may be preceded by headach, uneasiness, giddiness, and general irritability. Suddenly, without apparent cause, the patient will be seized with severe pain in the region of the uterus of a spasmodic character, with distinct contractions of the uterus, and so much suffering during the whole of their duration, as will distinguish them from real labour pains. Wigand says that there is no dilatation of the neck of the uterus; but in this, Carus differs from him, and points out the possibility of mistaking rheumatism for the commencement of labour. It does not follow, however, that the expulsive efforts thus inauspiciously begun, will continue; though, if neglected, abortion or premature delivery has sometimes resulted. The proper remedies will generally arrest the uterine action, and the *os uteri* will resume its usual state. The irritation is generally propagated to the bladder, occasioning an urgent desire to make water, and pain when the desire is gratified. (*Joerg, Velten, Henne.*) The intestines also sometimes sympathize with the womb, and then the patient may suffer from colic, or diarrhœa, or both. The motions of the child are a source of great torment, owing to the increased sensibility of the womb—and from some sympathy (it may be supposed) with the mother, it not unfrequently happens that these motions are peculiarly lively.

" Joerg has remarked that the child is less frequently injured by rheumatism than by simple inflammation of the uterus. In the mild form there is little or no impression made upon the constitution; but the more severe attack occasions great disturbance. The pulse is quickened, and the skin made hot; the patient is sleepless and restless. Nauche adds, that the irregular contraction of the womb is sometimes extended to the limbs.

" When the affection occurs during parturition, the pains are as it were arrested; they become tedious, ineffective, and often sudden and interrupted, occasioning more suffering than usual. The patient is hot, thirsty, and irritable, unable to remain long in one posture—the pulse quick, and either full, soft, and undulating, or small and hard. (*Wigand.*) The uterus becomes very tender, the weight of the bed-clothes occasioning much pain. The sensibility may extend to the neck, rendering examination very painful. (*Dezeimeris.*) During a paroxysm the uterine tumour feels much harder than usual. If the case be left to itself, we shall find the pains become weaker, or even entirely suspended for some hours. If the patient should fall into a perspiration and sleep, the natural pains will recur, and the delivery terminate favourably.

" The *Prognosis* is in almost all cases favourable, except where the patient may have been neglected until the rheumatic contractions have caused labour to commence.

" *Diagnosis.*—It will be of some importance to distinguish an attack of rheumatism of the uterus, from inflammation, and it may not at first sight always be easy to do so. Generally speaking, when inflammation occurs during gestation, it is more limited, and consequently the pain will be more localized than in rheumatism. Then the occurrence of paroxysms, as a marked feature of the disease, is peculiar, for the most part, to rheumatism. Again the setting in of rheumatism is much more sudden than that of inflammation.

" An attack very similar in symptoms to rheumatism of the womb occasionally occurs just before labour comes on; and notwithstanding, the labour is easy and natural. In such cases it has been concluded that the bladder, and other parts adjacent to the womb, have been affected, but not the womb itself. (*Wigand, Dezeimeris.*)

" *Treatment.*—Our principal reliance must be placed upon moderate antiphlogistic measures, aided by sedatives and diaphoretics. If there be much feverishness, or if the pain be excessive, and nothing in the patient's condition forbid it, blood may be drawn from the arm, in amount varying from 6 or 8 ounces to 12 or 14 ounces.

" After this, a gentle diaphoretic may be given at intervals during the day, and at bed-time it may be combined with an anodyne. Dover's powder answers both purposes exceedingly well. (*Joerg.*) If the pain be severe, it will be necessary to give anodynes in considerable doses, and perhaps the best mode of administration is in the form of enemata. An opium or belladonna plaster to the abdomen will be found useful, carefully avoiding the impression of cold; (*Wigand*), or an opiate lotion or liniment may be used. Counter-irritation to the sacrum is recommended. The bowels must be kept free by gentle laxatives. In addition to this exhibition of medicines the patient must be warmly clothed. The bed in which she lies must be kept comfortably warm—warm flannel should be applied to the abdomen, and round the hips, and bottles of hot water, or hot bricks, applied to the feet. A warm drink of whey, or other bland fluid, should be given occasionally, and especially at bed-time. The diet should be light and nourishing, but without stimulants. In a report by Professor Busch, of the Berlin Lying-in Charity, published in the *Lancet* about a year ago (I do not recollect the number,) it was stated that, in consequence of rheumatism of the uterus, it had been found necessary to induce premature labour. Such a case must be extremely rare, as I have met with no other on record.

"The treatment of the disease, when it sets in during labour, does not vary materially from that described above—bleeding, opiates, and sudorifics being our main resource. It appears that neither form is very obstinate."—Pp. 53–60.

In the Second Part of the work, on the Diseases incidental to the Puerperal State, the author describes those diseases and accidents which affect the uterine system itself; secondly, those which seem to be propagated from this system; and lastly, certain febrile affections and disorders of the breast. We would particularly recommend the chapter on Puerperal Fever, as containing a very learned historical and pathological treatise upon this disease. We shall quote his remarks on the Thrombus, or sanguineous tumour of the labia, as a fair specimen of this portion of the work. We omit, as on the former occasion, the long foot-notes and references.

"This disease was first described in these countries by Dr Macbride, of Dublin, who, in the year 1776, published two cases in the *Medical Observations and Enquiries*.

"A third case was read by Dr Rainey, of Dublin, in 1774; a fourth was published by Dr Maitland, in the year 1779; and a fifth by M. Perfect, in 1783. Since that time, it has been noticed by many writers on midwifery. Denman, Burns, Merriman, Dewees, Hamilton, Campbell, Davis, &c. &c.

"A case by M. Champion is related in the *Dictionnaire des Sciences Medicales*; and Mad. La Chapelle quotes one. It is also described by Schreider, Siebold, Ebert, Carus.

"Latterly, the disease has been more frequently observed.

"In his excellent and elaborate address, delivered at the fourth anniversary meeting of the Provincial Medical and Surgical Association, held at Manchester, July 21, 1836, Mr Crosse remarks: 'In no branch of midwifery have more contributions been furnished, within the recent period to which I refer, than in regard to certain *varices* attaining an enormous size, and bursting, so as to form sanguineous extravasation into the labia or cellular texture of the pelvis and vagina, often with a suddenly fatal result. Within the sphere of my own observation, one such case has recently transpired, which led to a coroner's inquest, as unfortunate cases in this line of practice are not unfrequently found to do—affording strong proof of the responsibility incurred by the accoucheur. The names of Phillipart, Naegele, Jun., Stendel, and others may be enumerated, in the impossibility which I find of dwelling upon the subject; and the elaborate paper of Mr Ingleby upon tumours obstructing delivery, may be consulted as affording the best rule for discovering and treating such cases.'

"From the history I have given, it is evident that the disease is of very rare occurrence.

"This disease, which consists of an effusion of blood into the cellular tissue, may affect one or both labia (*Baudelocque*), and may extend into the pelvis, and downwards to the perineum. It may occur during labour, previous to the delivery of the child, (*Maitland*,) but more frequently immediately after.

"In general the tumefaction is sudden, increasing rapidly; but in a few rare cases it has been observed to grow more gradually. (*Burns*.)

"The size varies very much; in some cases it is enormous—as large as a child's head. (*Macbride*.) As much as 6 or 7 pounds of blood have escaped. (*Schedel*.)

"*Causes*.—There can be no question that the effusion arises from the rupture of some vessel, by the pressure of the child's head during its passage through the pelvis; but there is some doubt from what vessels the blood escapes. The quantity is so great that it has been supposed impossible that it could proceed from the vessels supplying the part, which are ordinarily small; but it must be recollected, as previously stated, that these vessels are often in a varicose state during pregnancy.

"Dr Burns supposes some of the vessels in the nymphæ to be ruptured; Dr Dewees, that the vessels of the vagina give way; and Drs Davis and Campbell, the pudic vein.

"*Symptoms*.—There is nothing in the character of the labour to excite alarm—the cases have almost always occurred with natural labours.

"The patient's attention is first attracted by the swelling of the labia, and the feeling of weight and bearing down. If we examine at this period, we shall find one or both of the labia irregularly distended; and if the tumefaction be great, the labium is everted, so that it appears to be covered by the mucous membrane. This has given rise to its being mistaken for the protruded membranes. The colour is livid, almost black, and the parts are extremely tender.

"The tumefaction rapidly increases, until it covers the vulva and the perineum.

"The pain is very great, and goes on augmenting in proportion to the distension. A considerable degree of fever is excited, the pulse becomes quick, the skin hot, there is severe pain in the head, and delirium. The distress is often increased by retention of urine, from the swollen labium pressing upon the orifice of the urethra.

"The patient lies on her back, scarcely able to move, and with the thighs widely separated. She cannot bear even the weight of the bed-clothes.

"After the lapse of a few hours, relief from the agony is obtained by the rupture of the labium, which always takes place on its inner surface, and the discharge of blood. The mucous membrane is observed to vesicate, and then to become gangrenous, after which, it yields to the pressure. A portion of the blood escapes; but some coagula remain attached, and as these soon putrefy, the wound becomes very offensive. By degrees, however, it is thrown off, or absorbed, and the wound heals.

"This rupture sometimes takes place during the labour; and in such cases, as well as in those where it occurs before the blood is coagulated, the loss is sometimes so great as to occasion fainting, or even death. *(Crosse. Phillipart. Naegele Jun. Schedel.)* This is not always the case, however. Dr Macbride's patient recovered speedily, notwithstanding the labium burst during labour.

"When the distension is enormous, and occurs before the birth of the child, it may prove a very serious obstacle, requiring surgical interference for the preservation of the infant's life.

"*Diagnosis.*—The tumour has been mistaken for—1. *hernia*—but the rapidity of its formation, its size, and its appearance, are so different, that a careful examination will at once decide the point.

"2. It is said to resemble the 'bag of the waters;' and in Dr Maitland's case it was punctured by the midwife under this supposition; but the bag of the waters can be isolated from the labia, and traced up to the os uteri, rendering the distinction easy. Moreover, in many cases the sanguineous tumefaction does not occur till after delivery.

"*Treatment.*—As all the distress of the patient is attributable to the distension of the labium, the most direct means of relief is evidently, to remove this by an incision into the swelling; but it would not be prudent to do so until a sufficient time has elapsed to allow the blood to coagulate. Meanwhile, the catheter may be passed, and the urine drawn off. In some few cases it has been necessary to bleed from the arm, on account of the fever and general irritation.

"After an hour or two has elapsed, a large incision may be made into the labium, and the blood allowed to escape. The coagula which are adherent to the cellular tissue should not be disturbed, as the bleeding might be reproduced. A charcoal poultice may be applied; or a lotion of spirit and water, vinegar and water, chloride of lime, or any antiseptic. As the coagula separate, they should be removed, and the parts kept very clean, by washing with soap and water. This treatment is equally suited to those cases where rupture takes place spontaneously. If the bleeding continue after the incision, a compress of lint should be laid on the wound, and pressure applied.

"The diet of the patient should be strictly antiphlogistic, so long as the fever continues; but after suppuration is established, it will be necessary to allow good diet, with wine and tonics.

"The bowels should be kept free.

"If the labium rupture during labour, our efforts must be directed to arrest the hemorrhage by pressure, cold and styptic applications, &c.; but if it do not burst, but by its size impede the exit of the child, we have no resource but to open the swelling, and guard against hemorrhage the best way we can."—Pp. 269–278.

Dr Churchill's present volume exhibits all the excellencies which we took occasion to point out in a former number of the Journal in our notice of his previous work on Female Diseases. At the same time it is free from most of those defects in typography, &c. upon which we then considered it our duty to animadvert. If inclined to find fault at all with the present work, or rather to suggest amendments upon it, we would advise that the long French quotations, which are appended to almost every page, should, in an English work, be translated into the English language, or, at least, be printed in better and more accurate French. It appears to us also, that, in various instances, too much space is given to the discussion of one subject, to the curtailment of others equally if not more important. Thus, while Hysteralgia or After-pains are treated of in a single page, the subjects of Toothache and of Salivation in the pregnant female occupy conjointly not less than ten pages.

Altogether, however, Dr Churchill's present volume is very ably executed; and we can have no doubt that it will soon become a favourite with the student, and a standard work of reference for the accoucheur and general practitioner. It is the only systematic treatise on the diseases of pregnancy and the puerperal state that has appeared in England since the publication of the work of Dr White of Manchester, on the same subjects in 1772.

ART. IV.—*A Treatise on the Causes and Consequences of Habitual Constipation.* By JOHN BURNE, M. D., F. R. C. P., Physician to the Westminster Hospital, &c. London, 1840. Pp. 257. 8vo.

DR BURNE states the object of his treatise to be, to direct attention to habitual constipation as a very frequent cause of general disorder, and of local diseases. After a few remarks, he proceeds in his first chapter to describe the disposition, relations, organization, and functions of the large intestine.

The second chapter includes general remarks upon, and various consequences of habitual constipation. The sufferings arising from constipation are well described; and Dr Burne follows Dr Hamilton Senior, Mr Abernethy, Dr O'Beirne, and several other authors in thinking that habitual constipation is a source both of general disorder to the health, and of local disease. In confirmation of the last statement are given two interesting cases of tumours of the breast, apparently depending on, or, at least, intimately connected with, habitual constipation of the bowels. As such tumours are commonly treated by surgeons, who are more apt than physicians to overlook the influence of general or internal remedies, the following case of tumour of the breast, recurring after an operation, and being dissipated by attention to the bowels, cannot fail to be read with interest.

"Charlotte Bowles, aged 43, was a patient at the Public Dispensary in 1830.

"The complaints, on account of which she applied, were headach, flushings in the face, acidity at the stomach, great flatulence, and a confined state of the bowels, which had been most irregular for many years. After she had stated these symptoms, she showed me a tumour in the breast, which I remember to have examined; but having made no note of it at the time, I cannot speak confidently of its character, further than my impression that it was an indolent scirrhus, and that it did not call for local treatment. She was put on a course of alterative stomachic aperient medicine, with a view to regulate the bowels, and improve the general health; but without any special reference to the tumour. She continued under treatment four months, got quite well, and was stronger and better than she had been for some years. When nearly recovered, she surprised me very much by saying, that the tumour in the breast had been diminishing for some time, and was now gone; which on examination I found to be the case, for the breast was soft and natural. I immediately wrote down the following history of the tumour, and regretted much that I had not made a note of her case when she first came under treatment.

"At 35 years of age, a hard tumour appeared in the left breast. above and to the outside of the nipple; and, in the course of eight months, attained the size of a walnut. It was attended with gnawing lancinating pains, very severe at times. Leeches, lotions, and plasters had been of no avail; no medicine had been taken internally. The tumour was excised by the late Mr Compson; the wound healed, and no return of the tumour took place till five years afterwards. This second tumour was situated in the cicatrix left by the removal of the former one, was very hard, and attended also with darting pains: the nipple was not involved.

"It would be improper in me to give any decided opinion of the nature of this tumour; but its history and character, as given by the patient, namely, its hardness, the darting pains, its excision, its return in the cicatrix in five years with the same features of hardness and lancinating pain, afford presumptive evidence of a scirrhus of the most indolent and chronic form."—Pp. 19–20.

Dr Burne narrates cases where disease of the liver was suspected when the bowels alone were at fault; but he remarks, that if the bowels are habitually neglected, preternatural determinations of blood to the various abdominal viscera are induced; and one case is mentioned where even inflammation of the liver was brought on by this cause alone. Hypochondriasis and melancholia he has frequently traced to the same cause. Nervous disorders, as neuralgia, have been long known to be excited, or, at least, aggravated by a constipated state of the bowels; but, in addition to a case of neuralgia of the face, Dr Burne describes one of epilepsy, alternating with paralysis of the extremities, and another of trismus or lock-jaw, which were successfully treated by attention to the bowels alone. A singular case of habitual constipation was communicated to the author by Dr Williams, where the patient, a lady, had frequently no evacuation for six weeks together, and in one year, only once in every three months, or four in the whole year. This individual, however, fell into a state of marasmus, accompanied by rigid contractions of the lower jaw and extremities, ending in death. After a few remarks on the duration of constipation, he concludes this chapter by the following observations, in which, however, he has been anticipated by Dr Armstrong.

"In the general treatment of disease, it is in vain to look for the due and peculiar influence of medicines, so long as the bowels are confined; for then some will not agree, as the preparations of iron; and others will not act, as those of opium. In two instances of *delirium tremens,* which occur to me, opium was given in very large doses; but, instead of tranquillizing the nervous system, it aggravated the delirium to madness, until the bowels, which were loaded, had acted freely; then the opium took effect, and induced that welcome sleep which led to recovery.

"Further experience would justify me in extending this remark to all cases of *delirium tremens,* and in establishing, as a principle of treatment, the administration of cathartics prior to, or simultaneous with, the administration of opium. Sleep and amendment are not to be expected until the bowels have been thoroughly evacuated." —Pp. 31, 32.

The third chapter treats "of the consequences of habitual constipation on the general health," and these the author divides into two stages, depending on their greater or lesser severity. The first or early stage of the affection of the general health from constipation, he describes as being characterized by "drowsiness and heaviness of the head. Then will be seen in many a darkness under the eyes, while the face is leucophlegmatic; or, if the temperament is sanguine, there will be an extraordinary flush of apparent health. To the heaviness of the head is, by and by, superadded pain of various character and situation; it may be an aching, a beating, or a throbbing pain in the forehead or temples, or over one eye, with a sense of great weight or giddiness. Flushings of the face occur,

and transient heats over the whole body, though the feet are, at the same time, cold. The drowsiness increases ; they find it difficult to rouse themselves to any kind of exertion. On going to bed they fall instantly into a sound sleep, which proves heavy but not refreshing ; for, on awaking in the morning, they feel tired, unwilling to leave the bed, and if they do not get up at once, sleep quickly overcomes them, only to increase the sense of fatigue when they awake again. Menstruation will, in some, continue regular in the midst of this disorder, particularly in constitutions of a rigid fibre ; while, in those of a lax fibre, it is often deficient or suppressed ; and, in those of a sanguine temperament, abundant even to menorrhagia. Leucorrhœa seldom fails to supervene. The urinary secretion is apt to be copious and colourless ; and flatulence in various degrees attends, although the digestion is not much, if at all impaired."—Pp. 34–35.

The author relates the circumstances of three cases, which confirm the accuracy of the general description here quoted. From these it appears, that the early consequences of habitual constipation of the bowels consist in a determination of blood to the head, which oppresses the brain and nervous system generally ; and in a sympathetic irritation of the abdominal and pelvic viscera, which disturbs the functions of some organs, and exalts the sensibility of others. In this first stage, these effects are so directly dependent on their cause, as to subside whenever that cause is removed, and hence it is only necessary to restore the action of the bowels in order to re-establish the health. When the habitual constipation of the bowels has been longer in operation, the consequences assume a less tractable character, and become, to a certain extent, independent of the original cause. It is when they have assumed this form that they are classed by the author in his second stage, which he characterizes in the following manner :

" The determination of blood to the head which, in the first stage, produces drowsiness by day and heavy sleep by night, now gradually increasing with the prolonged existence of the cause, interferes at length with the functions of the brain. The mind becomes irritable, apprehensive ; noises jar, distract the brain, and strong light overpowers the eye, while at the same time the delicate sensibility of these organs is dulled by the cerebral congestion, and the senses, though morbidly alive to great impressions, are no longer adapted to acute and nice perception. There is, in addition, pain in the head generally, greater in a particular part, as on one side ; often of a distracting character, giving sometimes the sensation of the brain opening and shutting ; and sooner or later the person falls down in an apoplectic fit. I have known many of these cases, some occurring in persons of a florid complexion and gross habit of body ; some in individuals pale and thin ; but, in all, there has existed for years, the common cause, an obstinate and difficult state of the bowels."—P. 40.

Various interesting cases of apoplexy, cerebral congestion, cephalalgia, dyspepsia, hemicrania, hypochondriasis, &c. are given as illustrations of this second stage; the diseases being in every case capable of being traced to a habitually constipated state of the bowels.

The next six chapters contain descriptions of the individual diseases to which habitual constipation, when it has arrived at its second stage, gives rise, and the treatment best suited to each variety.

Sick headach, or cephalalgia with gastro-hepatic irritation, it is remarked, is most common to the female sex, and comes on for the most part suddenly. A lady having gone to bed as well as usual, will awake in the morning with a sense of great weight in the head, and pain in one temple, or over one eye; or she may be seized with these symptoms at any period of the day, in which case, she is obliged to retire to bed. After the pain has continued a few hours, she grows sick, then vomits, rejecting quantities of greenish-yellow bile and mucus. The vomiting recurs at intervals, and the stomach remains irritable, rejecting everything, and resisting the influence of medicines of known efficacy in other cases of gastric irritation, till, at the expiration of twenty-four hours, the sickness and vomiting diminish, and aperient medicines are retained, which in due time act upon the bowels, when the headach, sickness, and vomiting subside. The individual soon regains her usual state of health, which continues without any material interruption till she is overtaken by another attack. The periodical regularity of the attacks are noticed, as also that of the greater severity of the paroxysm on each successive attack, leading eventually, as life advances, to attacks of apoplexy, or some serious visceral disease either in the liver, stomach, uterus, or alimentary canal.

The primary cause of sick headach, or, as it is sometimes improperly enough named, a bilious attack, the author attributes to habitual constipation; and the secondary or exciting cause to indiscretion in diet. When a paroxysm commences, medicine is found to be of little avail; as it will, in spite of all remedies, continue its regular period of from twenty-four to seventy-two hours. Active purgatives should, however, be administered, and if the constipation be obstinate, their action should be assisted by enemata. After the subsidence of the paroxysm, the bowels require to be kept freely open; and if any indications of determination of blood to the liver or brain still exist, blood should be abstracted to a moderate extent. The regular use of aperients, with the occasional employment of alkaline remedies, and attention to diet, are the means recommended for the prevention of the disease.

Indigestion, gastrodynia, pyrosis, subacute or chronic inflammation, and organic disease of the stomach, Dr Burne thinks, may all originate from habitual constipation of the bowels; and he narrates cases of each of these in proof of the correctness of his statement. He does not advance the opinion that habitual constipation is the exclusive cause of the above affections, but merely that it is the most frequent cause; and this is one of the subjects to which he wishes more particularly to direct the attention of the medical practitioner, as he believes that the removal of constipation will be found to be one of the chief means of relieving and removing disorders of the stomach. The cases which he gives to prove the correctness of his opinions, and in illustration of his views, are well worthy of careful perusal. The liberality with which he administers mercurials is the most objectionable part of his practice; yet, when it is recollected that he professes himself to be a warm admirer both of the doctrines and practice of the late Mr Abernethy, his preference for this class of medicines is sufficiently explained.

The author has given rather a new, yet apparently satisfactory, explanation of the source of the watery fluid discharged during a paroxysm of pyrosis. His words are:

"If this fluid came from the stomach, the stomach being full of the preceding meal, it is impossible to believe that none of the food would be thrown up with it; and as no food is mixed with the fluid, one must look elsewhere for its source. Whence else can it proceed? From the salivary glands and muciparous follicles of the mouth and throat! When an emetic is taken, and the person first feels sick, the mouth instantly fills with water, which runs from it in a clear stream, and then follows vomiting of the contents of the stomach. This clear stream is unquestionably furnished by the salivary glands and muciparous follicles of the mouth and throat, suddenly excited to inordinate secretion by sympathy with the troubled stomach; phenomena which form an exact parallel to the nausea of pyrosis and the sudden discharge of the limpid fluid. In both cases the fluid is tasteless, clear, thin, and rather ropy; and in both it proceeds from the same source; of which any one may satisfy himself by questioning patients closely, when he will be informed that the fluid runs from the mouth when nausea supervenes, but is not eructated or vomited, as Cullen, Mason Good, Abercrombie, Andral, and others describe. In severe cases of pyrosis, actual eructation and vomiting of the contents of the stomach succeeds the watery discharge from the mouth, but does not accompany it."—Pp. 77, 78.

In all cases where the stomach labours after taking food, Dr Burne observes, and where uneasiness, distress, or absolute pain is pretty regularly experienced, there is a heightened condition of the organic sensibility, dependent not merely on a state of irritation, but on the presence of actual inflammation. This inflammatory state of the stomach he believes to be present both in pyrosis and in gastrodynia, especially when this latter affection regularly follows the ingestion of food. The inflammatory action is probably seated in the submucous, muscular, and subserous tissues, these being the parts found most altered in texture after death. The fact, that a muco-gastritis may be kept up for a very long period of time without involving the other tissues, as is observed in drunkards, is considered as a strong circumstance in favour of the above opinion. In these last, the author has found the mucous membrane rather swollen, vascular, and softened, and the muciparous follicles hypertrophied, white, round, flattish, and imbedded in the membrane, giving it very much the appearance of rough fish skin. He therefore considers the two diseases as essentially distinct; the one, that of the spirit-drinker, being chiefly confined to the mucous membrane, the other, that of the person suffering from pyrosis and gastrodynia, seated chiefly in the cellular and muscular coats of the stomach. According to this view, the presence of pain shortly after eating, or when the process of chymification has been partially effected, is easily explained. The muscular coat of the stomach is particularly concerned in propelling the contents into the duodenum; but, as in these complaints, it is either itself, or its immediately investing tissues, in a state of inflammation, its contractions are attended with pain, aggravated no doubt by the increased sensibility of the mucous membrane, and of the pylorus itself.

As Dr Burne believes that habitual constipation is the main exciting cause of gastrodynia and pyrosis, his remedial means are "conducted on the principle of restoring the natural functions of the bowels, appeasing the irritability of the stomach, of subduing the subacute inflammatory action, and of removing as far as possible its consequences on the tissues of the stomach." Calomel, in small doses, so as slowly to affect the mouth, opium, the local abstraction of blood, counter-irritation, and aperients, are the means recommended.

The consequences of habitual constipation on the sexual organs in the female, through the sympathy of contiguity, are treated of in the sixth chapter. The advantage of unloading the bowels, which are usually in a state of constipation in all the diseases of the female sex, has long been insisted on. Dr Burne further shows, how close the connection is between the healthy functions of the sexual organs, and the regular state of the bowels; and also the various affections to which these organs are liable when the state of the bowels is neglected. Thus cases are given of menorrhagia, amenorrhœa, chlorotic amenorrhœa, utero-spinal irritation with hypertrophy of the breast, leucorrhœa, &c. all apparently originally induced by the habitually constipated stated of the bowels, and relieved or cured by the free use of evacuants. The author remarks, that, although the disorders of the female sexual organs have been produced by habitual constipation, it does not follow that the treatment should be directed solely to the removal of the constipation, or that by its removal the disorders will be immediately cured; for the effects often remain for a long time even after the original cause has been removed. In addition, therefore, to the free evacuation of the bowels, he conjoins remedies suited to each particular affection.

The consequences of habitual constipation on the sexual organs of the male sex are passed over, as being less frequent, less severe, and more seldom coming under the notice of the physician than those of the female sex.

In chapter seventh, Dr Burne treats of "the diseases of the cæcum and colon, as consequences of habitual constipation." These he mentions to be colic, diarrhœa, ileus, accumulation of feces, obstruction, displacement, inflammation, ulceration, hypertrophy, or thickening, with induration and contraction, and stricture. Illustrative cases of all these varied forms of disease are given, and in several of them, the diagnosis was verified by dissection. These cases are full of interest, and merit a careful perusal. In this chapter, Dr Burne calls the attention to the concomitant affection of the brain, which was in one of the cases so severe as to induce maniacal delirium; he does not, however, attempt any explanation of the phenomenon.

The diseases of the rectum, to which habitual constipation gives rise, are impaction of feces in the rectum, dilatation of the rectum, *prolapsus ani*, piles, fissures, fistula, rigidity of the *sphincter ani*, and stricture. For the relief of these varied ailments, so far at least as they depend on, or are connected with constipation, the author gives full and minute directions. Rigidity of the *sphincter ani* he is inclined to attribute almost entirely to the constipated state of the bowels, regarding the constipation not as the consequence of the state of rigidity, as has been usually supposed, but as the cause. In cases of fistula, he thinks that if the operation for the cure of that complaint were delayed for some little time, till the bowels were put into a more regular state, the constipation obviated, and the excessive vascularity consequently reduced, there would be less risk of the occurrence of dangerous hemorrhage, which occasionally follows this operation. Where stricture of the bowel really exists, the author gives the preference to saline aperients, as these appear more particularly to have the power of producing loose watery evacuations, thus fitting the excrementitious matter to pass more easily through the contracted or strictured portion of bowel.

The ninth chapter is devoted to the consideration of the cutaneous diseases which occur as consequences of habitual constipation. These are enumerated by Dr Burne to be erysipelas, erythema nodosum, psoriasis, impetigo, and acne.

The erysipelas depending on habitual constipation is described as being generally situate on one side of the face, being gradual in its formation and progress, often recurring in the same patient, seldom dangerous, rarely erratic, and when so only in a slight degree. It is less intensely red, hot, or painful, than the common phlegmonous erysipelas, and he thinks comes nearer to that described by Desault as the bilious erysipelas, or by Cullen as erythema, than to any other form with which he is acquainted. Little or no febrile movement attends the attack, and the patient is rarely confined to bed; though on some occasions it is attended with more or less fever, bilious vomiting, and headach. The reasons assigned for regarding this form as one of the consequences of a habitually constipated state of the bowels, is, that constipation is found in every case to precede the attack, and that the disease itself declines, and is removed by a course of aperient medicines; whilst it persists and recurs if these do not form a prominent part of the treatment. This is a complaint far from uncommon amongst sedentary females advanced in life. The above form of erysipelas has been brought several times under our notice within the last six or seven years, and our observations have led us to arrive at the same conclusions as to its origin and cause, as that to which Dr Burne has arrived. The most striking instance we ever met with where the connection between this form of erysipelas and the ordinary "sick headach," or bilious attack, occurred, was in the case of two sisters, pretty well advanced in life, both married, and both subject to a habitually constipated state of the bowels. So far their constitutional peculiarities appeared the same; but there was this marked difference between them, that at regular intervals, when the bowels were neglected, the one sister was seized with sick headach, bilious vomiting, &c. whilst the other was just as invariably seized with the peculiar form of erysipelas above described; and the same treatment, viz. free alvine evacuations, sufficed to cure both cases.

The author does little more than mention the list of cutaneous eruptions which he has found were produced or aggravated by a loaded state of the bowels; but the subject is worthy of a more minute investigation.

The causes of habitual constipation are considered in the tenth chapter. The chief of these are, inattention to the calls of nature, the want of proper conveniences, civilized life, sedentary habits and occupations, literary pursuits, travelling, laxity or debility of the muscular fibres of the intestinal canal, deficiency of bile, diseases of the brain, stricture of the intestinal canal, organized bands stretching across the channel of the bowel, adhesions, the diverticulum, displacement, and twist of the bowels, pregnancy, various intestinal concretions, adulterated bread, and foreign bodies. Several interesting facts are noticed on each of these heads; but it seems unnecessary to enlarge upon them here.

The eleventh chapter is devoted to the treatment of habitual constipation, and is divided into five sections; the first of which includes remarks on diet and regimen. It is remarked that, though the generality of mankind require to have their bowels evacuated once every twenty-four hours, certain individuals possess that peculiar idiosyncrasy that their bowels are only moved once every second, third, fourth, fifth, or sixth day, and if this regular period should be interfered with by the exhibition of medicines, they immediately begin to fall off in health and strength. This peculiar state in these individuals, it is remarked, is not properly a state of constipation, seeing that the dejections are of a healthy character, and have not undergone those changes which they usually do when so long retained. It is requisite, however, that this state should not be confounded with habitual constipation, and the safest guide is the appearance of the alvine dejections, which, when noticed to be altered in their appearance and odour, and passed with pain, is a sure sign of habitual constipation, which requires to be remedied.

Early rising is reckoned one of the most important points to be attended to for the prevention of constipation. By early rising is understood the not lingering in bed and going to sleep a second time, after having enjoyed a good night's rest. When a person awakes, he should feel refreshed, light, and cheerful; but, if the second sleep be indulged in, he rises with unwillingness, and with a feeling of languor, his spirits are dull, and his bowels are indisposed to act. The habit of frequenting the closet at a regular period of the day, and of strictly obeying the first calls of nature, are strongly insisted on, as also the proper mastication of the food, and the due attention to exercise. The author thinks that one chief reason why dyspeptics derive so little benefit from a residence in the country is the want of attention to the means of obviating constipation. Much may be done by means of diet to obviate constipation. A glass of cold water taken on rising in the morning, the use of bran-bread, figs, prunes, ripe fruit, mustard-seed, bacon, &c. have all been found highly beneficial. The author's remarks on this important subject, are, however, too short to serve as a guide as to the articles of food most proper for the use of those whose bowels are habitually constipated.

The second section is on the use of aperient medicines. The chief indication in the treatment of habitual constipation is to restore the excreting functions of the alimentary canal to its natural state; an object best accomplished, not by purging, but by securing the free and full action of the bowels at regular periods, by medicines which predispose the bowels to act of themselves. Those medicines, therefore, are to be avoided, which, though they operate mildly and effectually, leave the bowels constipated. Thus, in children, castor-oil and senna are to be preferred; in advanced life, the more active and stimulant resinous cathartics, as aloes, colocynth, gamboge, scammony, either singly or in combination, are generally requisite. When occasional stronger doses are required, a combination of calomel and colocynth, or salts and senna, are abundantly efficacious. It is remarked, that no general rule can be laid down as to the degree of purging which any particular case will require; this circumstance depending so much on sex, idiosyncrasy, and other peculiarities. The choice of the aperient medicine must be directed by the particular affection. Thus in irritation of the pelvic viscera, those medicines ought to be avoided which stimulate the rectum, or they should be so combined with others as to neutralize or obviate this property. For instance, aloes given alone would be inadmissible; but, combined with the sulphate and carbonate of magnesia, forms a safe and efficacious compound. For the same reason, saline medicines should be avoided where the urinary organs are in a state of irritability, as these all pass off by the urine more or less unchanged.

In fecal accumulations in the colon, and in accidental obstructions independent of any organic cause, Dr Burne recommends active and stimulant purgatives in full doses to be followed by saline ones; but if they fail of success, the active stimulant cathartics must be discontinued, and the saline aperients alone continued.

With regard to the frequency with which the dose ought to be repeated, the author observes, that he has generally found it best to administer aperients in sufficient doses every other day, taking the chance of the bowels relieving themselves on the alternate days, until they have been brought into a tractable state, and the influence of medicine upon the individual has been ascertained; after which the aperient can be so regulated in dose as to be administered daily with advantage. As it is most conducive to the patient's comfort that the bowels should act in the morning, medicines should be given either before dinner, at bed-time, or on rising in the morning, according to the length of time they require for operation. Pills are, therefore, in general, taken with greatest advantage immediately before dinner; senna, as a general rule, should be taken at bed-time; and saline medicines, as their operation is rapid, in the morning on rising.

Many remarks on the action and relative value of aperient medicines, administered singly or in combination, are given in the third section of this chapter. The obstruction of the bowels, to which the constant use of magnesia is apt to give rise, is pointed out; and one curious remark is made with regard to the addition of soap as an ingredient of the rhubarb pill, which is, that it appears to favour their accumulating into a tough mass in the large intestines, and thus produce obstruction of the bowels. The following is an interesting case illustrative of the above remark.

" Mr Callaway (to whom I am indebted for this case), was called to a lady, 64 years of age, affected with symptoms of strangulated hernia ; namely, vomiting, constipation, tumid and tender abdomen, and anxious countenance. He could not detect any tumour in the usual situations for hernial protrusion ; and being informed that the constipation had existed eleven days, and that the nurse could not throw up the enemas prescribed, he was induced to examine the rectum, where he at once discovered a firm unyielding mass, blocking up and obstructing the bowel. This mass was removed with great difficulty ; and on examination by a chemical friend, was found to be composed of soap, rhubarb, and cholesterine, which was explained by the fact of the old lady having been for a considerable time in the habit of taking, as an aperient, pills composed of soap and rhubarb.

" Soon after the impacted mass had been removed, the aperient medicines, given previously by the medical attendant, operated, to the entire relief of the vomiting and other symptoms."—P. 140.

The aperient to which the author appears to give the preference over all others is senna, not only on account of the mildness and certainty with which it operates, but because it disposes the bowels to act of themselves, and because, in proportion as it is continued, the dose, instead of requiring to be augmented, may be diminished, and its full effect, nevertheless, maintained. Moreover, says he, it has certainly the property of disgorging the liver, and carrying off the bile in a greater degree than any other medicine, except mercury ; all these being points of material importance in the treatment of habitual constipation.

Calomel, the author considers as altogether unfit for use as an aperient, on account of its specific virtues as a mercurial, and it is consequently chiefly with this last view that he administers this drug.

The use of bougies, lavements, and suppositories, is considered in the fourth section. With regard to the rectum bougie, the author thinks that it might be had recourse to, with advantage, much more frequently than is customary in the treatment of habitual constipation ; as a bougie of moderate size introduced into the rectum, and retained there for some minutes, has been found on its withdrawal to be followed by a motion of the bowels. This is a fact well known to nurses, who frequently obtain the same result in infants by the introduction into the rectum of a piece of smoothly twisted paper, or a cylindrical-shaped piece of soap. He thinks the use of the bougie is particularly called for in rigidity of the rectum, as it tends to restore the normal faculty of dilatation, when a moderate force, like the action of the gut, is brought to bear upon it.

The author condemns the indiscriminate and daily use of clysters, both because they do not dispose the bowels to resume their natural action, and because they wash away the natural lubricating mucus of the intestines, and thus rather increase the irritation they are intended to relieve, whilst the feces become more hard and scybalous under their use. But as an occasional resource, he highly commends their use.

In the fifth section is considered the treatment of obstruction of the bowels; and the first point to be attended to is to ascertain the cause of the obstruction, and whether any inflammation coexists. When these points are discovered, the treatment proper to each particular case is to be pursued. He cautions against the continued administration of strong purgatives, as then the patients are liable to sink under the treatment, rather than under the disease. Should the obstruction depend on fecal accumulations in the sigmoid flexure of the colon, he points out the advantage of administering injections by means of a long tube which will pass up to the seat of the obstruction. The great point, he remarks, in such a case, is to throw up as much fluid as the colon will bear, whether that be one pint or one gallon; as the colon acts with more vigour and effect when fully distended. On the subject of treatment, he is however short, as the chief directions are given when treating of the individual diseases to which habitual constipation gives rise.

The last chapter of Dr Burne's work treats of "the influence of constipation, and of the accumulation of morbid secretions and fecal matters in the large bowels in predisposing to and exciting the more prevalent diseases of India—namely, congestion, inflammation, and abscess of the liver, diarrhœa, dysentery, and organic diseases of the large intestine;" the whole being abstracted from Mr Annesley's work on the Diseases of India; and the views there expressed fully corroborate those of Dr Burne, as to the serious disturbances to the general health to which habitual constipation may give rise.

It is the custom amongst all branches of the profession to condemn in unqualified terms the various aperient pills which are vended throughout the kingdom; yet, after reading Dr Burne's work, it is impossible to deny that the reputation which several of these medicines have attained has not been altogether undeserved; and that the harm they do occasionally bears no proportion to the good attained by their employment. The chief evil is, that they are employed, without discrimination, and that their use is continued in general too long and too uniformly. No medicines, the composition of which is imperfectly known, should be taken, as these are, for months and years together.

Daily observation and experience confirm more and more the utility of the employment of purgative medicines in almost all diseases; and since the publication of Dr Hamilton's work on Purgative Medicines a mass of evidence of the strongest kind has been accumulating. Dr Burne, by bringing down the subject to the present improved state of knowledge, and by the able manner in which he has treated it, together with the numerous highly interesting illustrative cases he has been enabled to collect, has produced a work not only creditable to himself, but which will prove of much utility to the medical profession.

Art. V.—*Observations on the Management of the Poor in Scotland, and its effects on the Health of the Great Towns.* By William Pulteney Alison, M. D., F. R. S. E., Professor of the Institutes of Medicine in the University of Edinburgh, &c. Edinburgh, 1840. 8vo. Pp. 198.

There are no subjects of public discussion which possess a higher importance, and more extensive application, than those which are connected with the management of the poor. In bringing forward, therefore, the present publication to the attention of our readers, we do so, because it appears to us, that there is no part of society more interested in the state of the poor than medical men; none more cognizant of their character and their habits; whose professional duties carry them among them; and who have it more in their power not only to alleviate their sufferings by a humane exercise of professional skill, but to be accessory to their relief by others, through the medium of that influence which they naturally possess among all classes of society. The nature and operation of the poor laws in England have been so largely the subject of public discussion, that they are pretty well known throughout the whole of Great Britain. But few of our readers south of the Tweed are conversant with the mode in which the poor are relieved in Scotland; or are at all acquainted with their serious privations. We, therefore, think it may be interesting to them, more particularly, to introduce the subject to their notice; and no more fitting opportunity can be found, than is furnished by the appearance of the little work before us, which is the production of one of the most enlightened, as well as of the most amiable and kind-hearted of our Edinburgh Professors.

From the time of the dissolution of the monasteries, to the reign of Queen Elizabeth, the poor of England were very much in the state which is described by the celebrated Fletcher of Saltoun, as attaching so extensively, in his time, to the poor of Scotland. Mr Dunlop, in an interesting account which he published some years since, of the laws which respect the management of the poor in Scotland, gives a report to Lord Burleigh, in the year 1596, from the magistrates of the county of Somerset, as to the state of the lower orders in that county, from which it would appear that their destitution and demoralization were fully equal to what is mentioned by Fletcher, as existing in Scotland more than 100 years afterwards; and hardly superior to the case of the Irish at this moment. "In consequence," says the author, "of changes in the system of agriculture at that time in England, as more lately in Ireland and in the Highlands, great numbers of the poor country people were thrown out of employment, and, as a contemporary writer expresses it, 'old fathers, poor widows, and young children lie begging in the miry streets.' The landlords 'turned them out of their sheds like mice, and thousands in England, through such, beg now from door to door, who had kept honest houses.'"

This state of things resembled much that of society in the rural districts of Ireland at the present time; there being then the same anxiety to possess land, and the same willingness to submit to exorbitant rents, as is now the case among the Irish peasantry.

The celebrated statute of the 43d of Queen Elizabeth, which established poor laws in England, removed these evils to a considerable extent; and no further mention occurs of "agrarian outrages, of extensive misery among the peasantry, or of the nuisance caused by large bodies of vagrants." With us, some of the last acts of the Scottish Parliament, which directed the formation of parish schools, and regulated the mode in which the destitute poor were to be relieved, had a very favourable influence on the general character of our population. Since these laws were made, Scotland has merited the character of being one of the best regulated countries in Europe; and we may refer this, in a considerable degree, to their combined influence; for in England, singular as it may appear, there has been no approach to our system of public education, through the means of schools established by the authority of Parliament, in every parish; and dependent for their support on levies made by law on the landholders or heritors, as they are termed with us, according to their respective property. During a long series of years, but particularly towards the close of the last century, evils crept into the application of the poor laws in England, very much from the supineness and inattention of those on whom the management should have properly devolved. The better informed, and more independent classes of society, threw the direction of the funds for relieving the poor, on a lower grade, while, perhaps, indolence and mistaken ideas of benevolence, made magistrates adopt systems of administering relief which encouraged pauperism, kept down the wages of labour to an insufficient extent, and led to those numerous evils which it has been the design of the poor law amendment act to obviate.

In Scotland, the amount of relief was to be determined by the heritors or landholders, and the kirk-session; which last corresponds in some degree, but not altogether, to what is termed the vestry in England; and it is the main object of Dr Alison's publication to show, that the legal provision for the poor is very inadequate to their relief. This he attributes, partly to defective enactment, and partly to mistaken ideas, (as he considers it,) on the part of the heritors and kirk-session, and in towns, of the councils or other managers of the funds for the relief of the poor, as to the fair and proper claims possessed by them when in distress, on adequate provision for their support.

Theauthor's attention seems to have been forcibly directed to the subject, by his experience as an hospital and dispensary physician; and by the general result of the mortality in large towns in Scotland, particularly Edinburgh and Glasgow, from which his data have been chiefly derived. From an inspection of the various documents which came under his notice, it appears that the ratio of mortality with us is very much greater than that of England and Wales generally, and London in particular; for, while by the latest returns under the improved system of registration, the conjoint mortality of England and Wales is 1 in 45, and that of London 1 in 31.5; the mortality of Edinburgh, including the city properly so called, and the still larger district comprehended under that of the West Church, has 1 in 29.2; but that of the city alone, containing a population of 60,000, 1 in 21.8.

In Glasgow, the average mortality since 1830, has been 1 in 30; but in the years 1832 and 1837, respectively, it has amounted to 1 in 21, and 1 in 24.

These differences the author attributes to the great bulk of the lower population being less able to resist the operation of disease, than when, by having a legal claim for maintenance, in case of destitution, they are better nourished than would otherwise be the case.

The intimate connection which there has been, in Ireland, between epidemics and seasons of privation and suffering, from the year 1700 to 1817, has been pointed out by Drs Cheyne and Barker; and in relation to recent epidemics in Edinburgh and Glasgow, Dr Alison gives some interesting statements.

"It appears," says he, "from observing the times of these epidemics, the first in Edinburgh beginning in 1817, after two bad harvests, and at the same time as the Irish one; the next in 1826, after the great failures in 1825, and the sudden cessation, particularly of building speculations, in Edinburgh; and the last in 1836, after the great depression of trade both in Glasgow and Dundee, with which towns the lower orders here are much connected, and under the combination of other circumstances already mentioned, which have depressed the condition of the poor in Edinburgh of late years. In Glasgow, the evidence of the operation of this cause is still stronger; fever seems to have increased and diminished for forty years past, nearly as it did in Edinburgh, until the year 1836, when, after the great stagnation of trade, it became much more formidable. For twenty years before 1815, when the town was rapidly increasing in wealth, the number of fever patients in the Infirmary never exceeded 130 in the year. In the three years, 1817, 1818, and 1819, it amounted to 2715, or 905 in the year. It then diminished considerably, but rose after the failures in 1825, and in 1826, 1827, and 1828, amounted to 3520, or 1173 in the year. There was another increase of the disease in 1832; and after the great failures in 1835, it spread so extensively, that the numbers taken into the hospitals in 1836, 1837, and 1838, amounted to 9740, or 3270 in the year, and of these 5387 were in the year 1837 alone." —Pp. 23, 24.

The author goes into many details for the purpose of showing, that the sufferings among the poor have much increased of late years. The expenditure of the Society for the Relief of the Destitute Sick has increased, in about twenty years, from about L. 700 per annum to L. 1800, and the number relieved from 3000 to 10,000. The admissions into the Royal Infirmary, during the same period, have augmented from about 2000 to 4000 per annum; and the mortality has gradually increased from 1 in 20 to 1 in 8. The author also adverts to various circumstances which have occasioned a considerable resort of claimants to Edinburgh, and a diminution of the means by which they were likely to be supported. But it would be difficult to credit the existence of such a state of misery and distress as is mentioned, on unquestionable authority, to be frequently found in some parts of the old town of Edinburgh. Mr Tait says, " In many of the closes leading from the High Street to the Cowgate, every stair and every vacant apartment becomes the depository of everything that is filthy. One flat alone, situated in Foulis' Close, may give an idea of the extent to which dunghills within doors and in houses inhabited by poor families are sometimes carried. However dirty and confined this close is, it is, in many respects, superior to Blackfriars' Wynd."

" I have seen," (says the Rev. Dr Lee, Minister of the Old Church, and lately appointed Principal of the University of Edinburgh,) " much wretchedness in my time, but never such a concentration of misery as in this parish. Some of the Irish in it are very wretched, but by far the most wretched are Scotch. I have seen a mother and five daughters with another woman, in a house where there was neither chair nor table, stool, bed, or blanket, nor any kind of implement for cooking. She had the largest allowance given by the Charity Workhouse, 2s. 6d. a week." "I frequently see the same room occupied by two married couples, neither having a bed." "I have been in one day in seven houses where there was no bed, in some of them not even straw. I found people of eighty years of age lying on the boards." "Many sleep in the same clothes which they wear during the day. I may mention the case of two Scotch families living in a miserable kind of cellar, who had come from the country within a few months, in search of work. Since they came they had had two dead, and another apparently dying. In the place they inhabit, it is impossible at noonday to distinguish the features of the human face without artificial light. There was a little bundle of dirty straw in one corner, for one family, and in another for the other. An ass stood in one corner, which was as well accommodated as these human creatures. It would almost make a heart of adamant bleed to see such an accumulation of human misery in a country like this."—Pp. 11, 12.

Nothing can exceed this state of misery and destitution, even in the most distressed parts of Dublin; but yet some of the reports from the Commissioners in the Hand-loom Inquiry, in respect to Glasgow, exhibit a still more wretched picture of human misery.

"The wynds," (or lanes,) "in Glasgow," it is stated, "comprise a fluctuating population of from 15,000 to 30,000 persons. This quarter consists of a labyrinth of lanes, out of which numberless entrances lead into small square courts, each with a dunghill reeking in the centre. Revolting as was the outward appearance of these places, I was little prepared for the filth and destitution within. In some of these lodging-rooms (visited at night) we found a whole lair of human beings littered along the floor, sometimes fifteen and twenty, some clothed and some naked; men, women, and children huddled promiscuously together. Their bed consisted of a layer of musty straw, intermixed with rags. There was generally little or no furniture in these places; the sole article of comfort was a good fire. Thieving and prostitution constitute the main sources of the revenue of this population. No pains seem to be taken to purge this Augean pandemonium, this nucleus of crime, filth, and pestilence, existing in the centre of the second city of the empire. These wynds constitute the St Giles of Glasgow, but I owe an apology to the metropolitan pandemonium for the comparison. A very extensive inspection of the lowest districts of other places, both here and on the Continent, never presented any thing one-half so bad, either in intensity of pestilence, physical and moral, or in extent, proportioned to the population."—Pp. 13, 14.

Contagious fever, according to the author's observation, has not for a long series of years ceased to afflict Edinburgh; and though the exertions made by many benevolent establishments have tended to check its ravages, yet its rapid diffusion is much favoured by deficient nourishment, want of employment, and that state of mental depression to which those circumstances cannot fail to give rise. The disease is a formidable one to all; but it has proved eminently fatal to a most valuable part of society, men of a certain age, and at the head of families; while among members of the medical profession it has committed most serious ravages. Dr John Gordon, Dr James Gregory, Dr Mackintosh, and Dr John Home, are mentioned as having been carried off by fever in Edinburgh; and within the last two years it has fallen to the author's lot to witness the premature death of sixteen promising young men connected with the University from the same cause. We may particularize as among those who have fallen victims to this complaint in London, Dr Murray, the first Physician to the Fever Institution; Dr Garnett, Dr Myers Lettsom, Dr Cleverly, and Dr Da Costa.

There is every disposition in Edinburgh to relieve the sick poor; and to this object, as far as the Infirmary and dispensaries are concerned, the medical students contribute the principal share. But there is a general impression in society, that the relief of *mere poverty* is unfavourable to the interests of the community; and hence the unemployed, the aged and permanently disabled, and the widows and orphans of the poor, are seriously aggrieved. So far does this feeling extend, that no increase has taken place in the assessment of the city parishes since the year 1825; and when an increased assessment was proposed by the managers of the work-house last year, on account of its urgent necessity, it was refused by the town-council, who are the sole arbiters of the matter. In the same way was the trifling increase of rate from 11d. to 1s. in the pound, in the West Church parish, rejected by a large majority; and to the present time the members of the College of Justice, who include the chief part, if not the whole of the lawyers, (who are the most opulent part of the community,) exempt from all taxation on account of the poor, and exhibit no disposition to give up this very extraordinary, and, as our English readers must think it, most incomprehensible privilege.

From the feelings which exist throughout the Scottish public generally, as to the inexpediency of legal provisions for the poor, strengthened as they have been by the reasonings of Malthus, Maculloch, and other writers on political economy, as well as the sentiments of many able and philanthropic divines, and in particular of Dr Chalmers, it is less a matter of surprise than might at first be thought to be the case, that the higher ranks in Scotland, according to the opinion of the author, "do much less for the relief of poverty and of sufferings resulting from it, than those of any other country in Europe which is really well regulated; and much less than experience shows to be necessary, in any long inhabited and fully peopled country, in order that the lower ranks may be maintained in tolerable comfort, and a proper foundation laid for their religious and moral improvement."—P. viii.

The whole funds applied to the relief of the poor in England, even after the great reduction is taken into account, which has occurred since the passing of the poor law amendment act, are nearly six times greater in proportion to the population than in Scotland.

There is perhaps, as a common attribute of the human race, a disposition very readily to generalize in favour of personal interests. When a man can save his money, and at the same time persuade himself, or the community, that he is acting upon the best principles of humanity, and with every feeling of sympathy to the lasting benefit of the poor; that he is playing the part of the philosopher and political economist, and only getting quit of foolish and antiquated prejudices, by withholding that relief which is not wanted, and will do harm; his self-complacency may perhaps flatter himself into a belief that he possesses a higher place in intellectual endowment than falls to the lot of ordinary mortals.

But then comes the point, which Dr Alison puts very forcibly,—That there never has been, and never will be, a state of society, in which, by any description of management, poverty and destitution can be prevented. If, therefore, as we are told on the highest authority, "the poor shall never cease out of the land," common humanity dictates that their necessities should be relieved, and their sufferings moderated, even if the same authority did not command us, "to open thine hand wide unto thy brother, to thy poor, and to thy needy, in thy land." But it is not indiscriminate charity which is thus inculcated, and of which there seems to be a tremulous, and, we would add, a morbid fear among our countrymen; for though we are told, that "if there be among you a poor man of one of thy brethren, within any of thy gates, in thy land which the Lord thy God giveth thee, thou shalt not harden thine heart, nor shut thine hand from thy poor brother, but thou shalt open thine hand wide unto him;" yet the relief thus ordered is to be given with *discrimination and discretion*, for it is added, "thou shall surely lend *sufficient for his need in that which he wanteth*."

But it may be fairly asked of those in authority around us, whether they can really consider sufficient for his need, to have been dispensed to the poor persons under their protection, according to this command? and of our venerated ministers of the Scottish church, it may be inquired, whether, with a knowledge of such distresses as have been pourtrayed in Dr Alison's work, and on subjects of notoriety in Edinburgh, they can conscientiously think, that their destitute neighbour has ordinarily been supplied sufficiently in "that which he wanteth." It is not that there is no provision for the poor in Scotland. Were this the case, our rulers might plead a want of power to do what humanity dictates, and adequate powers would be readily conceded. But we would seriously admonish them, (though perhaps at the risk of a *ne sutor* reprehension,) that their procedure is inconsistent; for if relief is to be given at all, it can never be intended to stop short of the fair and absolute necessity; and we submit that their responsibility is very formidable, if they allow mistaken philosophy, on the one hand, or a feeling of sympathy for the public purse, on the other, to interfere with the exercise of some of the most important of their duties and obligations, as men and citizens.

Dr Alison enters into considerable details, in order to point out the benefits which have been produced to England from the poor laws when properly administered; the absolute necessity for a public provision for the poor in Ireland, which has, after a long period of doubt and hesitation, been carried into effect; and the great importance that some change in the system of management, in respect to the poor in Scotland, should be adopted. He does not suppose it to be necessary, in order to make the provision for the poor what he thinks it ought to be, "that the English law should be introduced here," and is of opinion, that the law of Scotland, if administered in the same spirit; and if those "who are charged with the administration of the poor laws in all parts of Scotland should cease to regard them as an evil, would answer the same purpose."

The main error committed in respect to the administration of the poor laws in England, was the payment of a part of the wages of a great proportion of the labourers, from the poor rates, which first took place about the year 1796. The necessary consequence of so deleterious a practice was to make every labourer a pauper; and this tended materially to break down his spirit, to check his industry, and to make it the most important consideration with him, in what way he could succeed best in procuring from the magistrates a large order for relief. The industrious single man had no encouragement afforded for regular and steady habits. He might, it is true, be paid the same wages with the married; but when he applied to have those wages made up to the proper amount of weekly earnings from the poor rates, he was told, that, as he was not married, he was not entitled to any thing more than the pittance reluctantly doled out to him by the former, though it might happen that he was as good, or a better workman, than the person who, from the accidental circumstance of his having a wife and family, was much better paid. This, therefore, offered a premium and encouragement to premature and improvident marriages, and necessarily produced heavy and permanent additional burthen to parishes.

It is in the collateral and accessory way which we have just mentioned, that marriage was encouraged under the English system of poor laws, and demands on the poor rates augmented; for it does not appear, from the evidence produced by Mr Revans and Mr Sadler, that the proportion of the population receiving parish relief had increased during the century ending in 1790; that is, up to about the time that wages began first to be paid out of the poor rates. Nor did the poor rates during that period keep pace with the other branches of expenditure, or the numbers relieved, preserve their ratio with the increase of population. This last fact is a curious one; for, in 1700, according to the statement of Mr Sadler, the paupers were to the population as 10 to 45; in 1760 as 10 to 96; and in 1825, only as 10 to 120. The legitimate and necessary operation of the poor laws may be looked for in those parts of England only, (small, indeed, in extent,) to which the new and direful principle of paying wages, did not apply. For, it may be remarked, that, in the north of England, (where, as well as the south of Scotland, *Hindship** has long been universally prevalent,) no deviation from the usual prudence and forethought of the commonalty took place, through the operation of the poor laws, because in that part of the country, parochial relief was not perverted from its original design. The peasantry, therefore, have always aimed at being a little before-hand with the world previous to marrying, in spite of the bad example of the south.

Notwithstanding the endeavours which have been made by Malthus and some other writers, to show that the poor laws have an injurious effect, by offering a constant temptation to early marriages, this does not, from the author's investigations, appear to be the case. Even Malthus admits, that, notwithstanding the absence of the alleged preventive check on marriage, and the supposed effect of the poor laws in acting as a bounty on population, by insuring the existence of a legal security for the support of life, independently of prudent conduct, there is, nevertheless, a singular anomaly, inconsistent, as it would appear, with that view of the subject, namely, that the proportion of births in England, compared with other countries in similar circumstances, "*is very small.*" In Ireland, there was no such encouragement to matrimony, as is here deprecated; because there were no poor laws; and if poverty, and the total absence of any sort of prospect for the future, could operate as effectual preventive checks against encountering the risks of having a family, there they existed in full force. And yet the fact in relation to many parts of that country, as stated by the author, on the authority of published reports, is, that the poorer the individuals are, the more anxious are they to marry; and that they almost all marry "as soon as they can command money enough to pay the priest." It may be thought, perhaps, that the authority and cupidity, (as some may term it,) of the Roman Catholic clergy may conduce to this object; but the very same disposition exists among the poor of Scotland, where there is uniformly found, even with some education, the same union of reckless improvidence, with extreme destitution, which is so remarkable a feature of Ireland.

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* *Hinds*, it may be observed, are married servants, who live in cottages belonging to the farm; have gardens, keep for a cow, their coals carried; and a certain specific portion of the various kinds of corn, with but little money. It is from the savings of themselves, as ploughmen, and their wives, as in-door servants, that they can obtain the means of setting up their little comfortable establishments; and the almost certain prospect that, in a few years, most likely by the time they are twenty-five, they will succeed in their expectations, is a constant encouragement to industry and good conduct. Parochial relief is not anticipated, except during advanced age or unexpected misfortunes, whereas, with the humiliated feelings to which the modern application of the poor laws gave rise, it was not uncommon for persons to marry with the almost certain prospect of the work-house before them, and sometimes even in the work-house itself.

The following passage depicts very forcibly, and we believe, very correctly, the influence of destitution on the feelings. "The truth is," says the author, "that below a certain grade of poverty, the preventive check of moral restraint has no power. Twenty-five years of observation of the habits of the poor have shewn me, that there are none among whom population makes so rapid progress as those who see continually around them examples of utter destitution and misery. In such circumstances, men hardly look forward to the future more than animals. It is easy for us to say, that by cutting off from a poor family any prospect of relief, in case of destitution, we can make them careful and prudent. The practical result is widely different. Another alternative is uniformly embraced. *They lower their habits;* and those who have not been accustomed to observe them, are not aware how much reduction of comfort the family of a labouring man, disabled or deprived of employment, may undergo, and not only life be preserved, but the capacity for occasional irregular and precarious employment continue. Their better clothes may be pawned, their furniture and bed-clothes may be sold, they can lie on straw or shavings of wood, sometimes on 'bare boards,' and never undress; two or more families, may be crowded into a single room, and struggle to pay the rent among them. Such associations of 'lone women,' who have only occasional employment, and of unemployed and disabled men, widows, and orphans, are continually formed. They gather cinders on the streets late at night and early in the morning, they beg for bread, wherever they are permitted, among the rich, and if repelled from them, they seek for sympathy among the poor. Three meals in the week will support life for many weeks. I have known instances where I had satisfactory moral evidence, that the mothers of such families have submitted, for the sake of their children, to such privations, for months together. If they fall sick, as after a time they infallibly do,—the medical charities come to their relief. Thus, almost without visible means of subsistence, many of the poorest families in this and other great towns, manage to pass the winter, while in summer they find precarious and desultory employment in fields and gardens. Now, if you mark the conduct of people who have fallen thus low, or watch the future progress of children brought up in this state of misery and degradation, you look in vain for the principle of moral restraint, or for indications of prudential motives counteracting the natural tendency of human passions. Many of the children die miserably in early youth, and those who survive are uniformly reckless and improvident. The daughters of families thus circumstanced receive no education which fits them even for service; and if they do not become prostitutes (which does not happen so often as might be supposed,) they are almost uniformly mothers at the age of twenty; and the progress of population is thus rendered most rapid in that portion of society which lies nearest the verge of absolute starvation.

"On the other hand, when men are preserved from this state of hopeless and abject destitution, they all (or with few and trifling exceptions) gradually fall, more or less, under the dominion of *artificial wants*, and form to themselves a *standard of comfort*, from which they will never willingly descend, and to maintain which they will keep themselves under a degree of restraint, unknown to those of the poor who are continually struggling to obtain the first necessaries of life."—Pp. 85–88.

As a confirmation of this latter view of the subject, it is said, that in Ireland, the farmers, and those who "are better off, do not marry until they have some little subsistence;" "that the farmers' sons always marry later than the labourers, and are more cautious;" and that "those who have been accustomed to comparative comforts are generally more cautious and provident concerning marriages."

It would also appear, from the reports of the Poor Law Commissioners, that in the Azores and Sardinia, where there is no legal provision for the poor, early marriages are very common; while in Denmark, Hamburgh, Bremen, Holland, and Prussia, not only are early marriages very rare, (for they seldom occur before twenty-five years of age), but there is no inclination produced by the existence of a legal demand for public relief, to call for it unnecessarily.

A curious confirmation of the effects of improvident management in augmenting seriously the burden of the poor rates, is mentioned as having occurred at Berne, and from a similar cause as in England; namely, that "the employers of labourers had the address to shift the burden of the wages of labour, in a great measure, from themselves to the rate-payers, and to convert regularly employed labourers, against their will, into paupers." That such a state of things will break down the spirit and independence, and lessen the industry of the poor, there is no doubt; but the author can see no such effect as likely to be produced by there being a well-regulated legal demand for relief, when urgently required, instead of the poor being altogether dependent on a humiliating and debasing mendicancy.

From the period of the enactment of the poor laws in England up to that of their comparatively recent perversion (which embraces a period of more than 200 years) no such degrading influence exhibited itself; nor does the example of England, so prominent in works of benevolence of every kind, justify, in any way, the apprehension which is so prevalent among the indiscriminate condemners of legalized relief, that poor laws have a necessary tendency to interfere with the exercise of private charity.

It is quite clear, we think, that the author has shown, that it is high time that some decided measures should be adopted to put an effectual check to this progressively increasing evil. The method hitherto pursued is not adequate to the end in view; and it is neither creditable nor expedient to allow the present state of matters, as to the poor and indigent in large towns, to continue. The only difficulty consists in determining what are the means, by which all the evils delineated in the present tract may be most effectually alleviated; for we do not believe that they can ever be effectually removed; and we know, that upon this subject, however much men may agree upon the existence and amount of indigence, and suffering thence resulting, yet it will be by no means easy to obtain general and much less unanimous concurrence on the most eligible and practicable means for obviating and diminishing them.

The first measure that seems to be requisite is the general enforcement of the poor laws all over Scotland; in other words, the assessment and collection of a general rate for the maintenance of the poor in every township and parish of Scotland. This is rendered indispensably necessary, in order to equalize and render uniform all over the country the burden of supporting the poor. If the system be not rendered uniform; if the poor laws be not enforced in every township and parish, and in every county; then a great influx of indigent persons will take place towards those parts where there are legal provisions for the poor, while situations in which there are no legal provisions will, of course, be deserted. A curious fact may here be mentioned, showing the mode in which this principle operates. Dr Alison has very properly mentioned that the town-council of Edinburgh refused last winter, when fever was prevalent, to increase the rate of assessment for the City Charity Work-house, and that the managers of the West Church Charity Workhouse equally refused to increase their rate of assessment. Regarding the latter institution, we cannot speak positively as to their exact reason, unless that they felt that the parish was already assessed as heavily as the rate-payers were disposed to bear. We know that they have been making great and laudable efforts to keep out of debt; that they have consequently been keeping their expenditure on as low a scale as possible; and that they were desirous to show that the poor in the West Church parish were maintained in as economical a manner as was practicable. We believe also that they are not in debt.

It is somewhat different with the City Charity Work-House. That institution was stated in the last Report for July 1839, to be L.14,429 in debt, chiefly in consequence of the great expenditure incurred in maintaining the indigent of the different parishes of Edinburgh. These indigent inhabitants are of various kinds. Many are Scottish,—widows and orphans not maintained in the work-house, but receiving out-door relief. But a considerable number also are poor, indigent, and helpless Irish, or the offspring of Irish parents, who, by residing three years or more in any of the parishes of Edinburgh, become entitled to this species of eleemosynary assistance. Of the Scottish, but a very small proportion are natives of Edinburgh. Immense numbers flock from every parish in Scotland to the metropolis, either in search of employment, or sometimes, as we have ascertained, in the hope of receiving assistance from some of its charitable institutions; or constituting a claim at least to procure the benefit of these institutions to their children. In short, the influx of indigent persons is a good exemplification of the truth of the saying, that where the carcase is, thither will the vultures be gathered together.

During the year ending on the 30th of June 1839, the number of persons, adult and young, maintained in the City Charity Workhouse, was on an average 759. The number of persons receiving out-door relief during the same period appears to have amounted to 2485. The average annual expense of maintaining each in-door pauper is about L. 7, 7s. 8d. The sum of L. 5464 was expended on in-door paupers; and L. 4645 in affording out-door relief during the same period.

It is partly in maintaining this extraordinary number of indigent persons, and partly in maintaining persons rendered destitute by great general periods of calamity and distress, that the large amount of debt now mentioned has been contracted by the managers of the City Charity Work-House of Edinburgh. Thus, during the prevalence of cholera in 1832 and 1833, the ordinary amount of indigence and destitution was greatly increased, partly by direct illness among families, partly by several families being deprived of one or both parents, and thus being thrown on the public charity. Debt already incurred was thus greatly increased, and has not been diminished. It is with the view of preventing this debt from being increased, that the members of its town council refused to increase the assessment, and hoped thereby to diminish the number of applications. It is quite clear that, if Edinburgh had to sustain only its own poor, and those who had a legal claim, from long residence in some of the city parishes, its funds would be much more adequate to do so than they at present are. It is also equally clear, that, if there were a power of sending home helpless and starving Irish, and sending to their respective parishes the numbers of Scottish who resort to Edinburgh, this debt would probably never have been incurred. But so long as shoals of Irish are annually pouring into Scotland, and so long as there is no poor law in Ireland, indigence, destitution, and suffering, must prevail to a great and increasing extent.

Another measure requisite is to increase the period of residence required for qualifying for obtaining public relief. At present in Scotland it is only three years, though in England a person may be sent home to his original parish without obtaining a settlement if he has been twenty-five or even thirty years without having property in the parish. Were the period requisite to acquire a settlement lengthened, or assimilated to that of England, it would certainly diminish the burden which at present falls so heavily upon Edinburgh.

In the event of union work-houses being deemed requisite, and we perceive not how they can be avoided, we must express decidedly and confidently the opinion, that a very different method of proceeding with the medical officers required, from that adopted and hitherto pursued in England must be devised. It is quite unnecessary to revive here any of the discussions regarding the merits of the new poor law. That law we may, however, say was in its principle as good and perfect as perhaps any poor law could be; for every legislative measure relative to the management of the poor, and the method of giving relief, as well as the amount of relief given, must be imperfect and faulty, and can never be in the nature of things otherwise. The only thing that can be attended to is to adopt the method of affording relief least exposed to faults and imperfections. A mighty error, however, was committed in giving to the commissioners the powers with which they are invested; and, as part of this, enabling them to show their intention to insult and degrade the members of the medical profession in the manner they did, and which has been one of the great sources of objection to the new poor law, and the method of its administration. This attempted insolence and degradation, it is well known, was so extensive, so systematic, and done in a manner so offensive, that it has called forth almost unanimous disapprobation throughout England, from a profession which does more good to the poor and indigent in the course of one single year, than it is possible for all the members of the legal profession to do in the course of a long life. The members of the medical profession were treated under the old system with a sufficient degree of contumely and injustice, in attempting in many cases to play them off against each other by the system of tenders and contracts at the lowest rate possible. Bad as this system was, the commissioners under the new poor law certainly did their best to improve on the method of deterioration; and, as economy was the great plea of all their proceedings, a little experiment on that way in the doctors was conceived no very bad speculation. Tenders were accordingly advertised for on such wretchedly commercial terms, that it must have been manifest to the most superficial observer, that all that was wanted was either no medical assistance at all, or medical assistance on a scale so limited, that it was a mere apology for medical assistance. The details we cannot here admit. They may be found in the Medical Gazette, and in the able Report of the Midland Provincial Association. It is sufficient to say, that such a system was never heard of in the annals of any civilized nation; nor could it be imagined that it was reserved for the nineteenth century, to behold such a plan of pitting against each other like a set of miserable hucksters, the members of a profession not unjustly styled liberal, —and to the lasting and extensive detriment of the persons who ought to be benefited by their assistance.

We need not say we trust that another scene of this kind shall not be again enacted in Scotland; but we take this opportunity of raising our warning voice, and saying that if it be, it would be infinitely better for all parties that matters stand in their present position. We are at least confident that, unless sufficient and adequate compensation be made to the medical attendants, if the poor law be enforced, and unless the preposterous, debasing, and demoralizing system of farming the poor to the medical practitioner who will do it at the lowest rate, without regard to either circumstances and conditions, be abandoned,—the diseases of that class of the community will be much more attentively cared for and treated, if the present method be continued, than under that of the contract system.

A single remark in conclusion relates solely to Edinburgh in the mode of providing funds for the maintenance of the poor. We trust that, after considering the facts and arguments adduced by Dr Alison in the present tract, the members of the College of Justice will perceive the propriety of giving up that privilege or immunity they have so long enjoyed, of being exempted from contributing to the poor's rate. Whatever opinions may be entertained by individuals among that learned body, they are, we are satisfied, generally actuated by principles both of benevolence and justice; and we do not believe that, when they are satisfied of the urgency of the case, they would wish to shift from themselves the burden of providing for the indigent of the city, and allow it to press with such a ponderous weight upon their fellow-citizens. They must perceive that the immunity which they enjoy, was given at a time, when it was requisite by such considerations, to induce men to devote themselves to the study of the laws of the country. At present, and for a long time past, when there is no lack of persons to devote themselves to the study of the law, it is clear that the period for retaining such immunities has long past away. Without insisting, however, on this argument, we put it to the feelings of equity and generosity, by which we believe these gentlemen to be actuated, to say whether it is reasonable that a portion of the community, allowed to be as a body at the head of the society of Edinburgh, and all of whom are in easy or independent circumstances, and a considerable number in affluent circumstances, should continue to claim an exemption from a burden which presses with considerable weight upon their fellow-citizens in all professions, and upon large numbers, with means much more limited. We are sure, when they consider the matter, that they cannot in common decency continue to urge their immunity. Upon this subject, however, which is disagreeable, we forbear to dwell. We think it merely requires being mentioned; and we think it will not require being again brought under notice.

The subject, however, would require very mature consideration before any decided measures be adopted. On these our limits will not allow us to dwell any longer at present.

The author makes many important observations on the particular points, to which any new enactments for the relief of the poor in Scotland should be directed; and we would confidently hope, that an improved and adequate system of legislation will be soon adopted, for the purpose of removing the serious evils which Dr Alison has, in this little work, so impressively and appropriately made known to the public.

ART. VI.—*Gatherings from Grave-Yards; particularly those of London: with a concise History of the modes of Interment among different nations from the earliest periods; and a detail of dangerous and fatal results produced by the unwise and revolting custom of inhuming the dead in the midst of the living.* By G. A. WALKER, Surgeon. London, 1839. 8vo. Pp. 258.

THE practice of interring the bodies of the dead within churches, in vaults beneath them, or in the ground surrounding them, is one of those blessed legacies which were bequeathed to Europe by the tender mercies of the infallible Church of Rome. The practice of consecrating ground for the reception of the bodies of the dead does not appear to have been common, until that of burying within churches or beneath them had been followed for several centuries. At first bishops, abbots, priests, and other ecclesiastics, who had been distinguished for their learning or the sanctity of their lives, were alone believed worthy of having their remains interred in churches and other consecrated buildings. Afterwards the same favour was extended to monarchs, nobles, and other laymen, who by their piety, or their zeal for the church, or the liberality of their donations, had been allowed to merit this singular honour. The great mass of the community still deposited the bodies of their departed friends in remote places beyond the walls of cities, or, in the case of the more wealthy inhabitants, in gardens and pieces of ground assigned for the purpose.

The practice, however, which the Romish clergy introduced, of performing a solemn and imposing funeral service over the bodies of the dead, and of saying masses for the peace of departed souls, filled the minds of men with new notions on this subject, and rendered the dying anxious to have their bodies placed in situations where they conceived they would be most completely protected against the machinations of evil sprits, and surviving friends solicitous to inter their relatives under the immediate protection of consecrated buildings. This favour was purchased by liberal bequests of riches and lands; and in some instances it was directly secured by the dying sinner leaving ample means, with instructions for erecting a church, an abbey, or a monastery over his tomb. In the manner now specified, churches and other religious houses were multiplied in all the countries of Europe; and the practice of interring the bodies of those who could gratify the avarice of the Romish clergy, by paying for this expensive luxury, became very general in almost every Christian country.

It was not in the nature of mankind to disregard a source of pecuniary revenue and incessant benefaction, so steady and inexhaustible; and the ecclesiastics of these days must have been either less or more than men, if they neglected to avail themselves of it, in gratifying some of the most natural feelings of the human race. What began as an unusual and extraordinary favour, terminated in being common; and the exception became, as to the method of interment, the rule. The practice of interring in churchyards even had scarcely yet become frequent so long as the interior of the churches, or their abbeys, or their cloisters could answer the applications for interment in the precincts of consecrated buildings; and so long as this mode of interment was a luxury confined to the pious, the exalted, and the wealthy. But as applications became numerous, distinctions became requisite; and to those who were ambitious to place their ashes in ground consecrated by the bishop or the abbot, but whose means did not enable them to found a church or endow a monastery, the ground which was blessed by the nearest church, presented a ready means of gratifying their wishes. Churches began in this manner to be speedily surrounded with sepulchres, tombs, and sepulchral monuments; and in process of time the ground, which surrounded the holy building, swelled and undulated with the graves of the departed inhabitants. In this manner, after the lapse of years, the churchyard was diverted from its original use of holding the church alone, and was made also a burying-ground for receiving the remains of the dead; and the practice became universal in every sense of the word, and has continued so for four or five centuries after the causes by which it was produced had either became enfeebled or altogether ceased to operate. A custom which was engendered in the darkest and most ignorant period of Catholic Europe, and during the heaviest and most irresistible period of Papal sway, has been retained with the most extraordinary obstinacy in Protestant countries, where Catholicism has ceased to be the general belief, and where, if ignorance still be felt, there is sufficient information to satisfy the majority of the community that the practice is not only irrational, but in the highest degree discreditable to the human race. It is well known that in this country the practice has been carried to such an extent as to form a gross and outrageous abuse, and in many instances a nuisance most intolerable. Though in Scotland the practice of interring the dead within churches has become very rare and almost obsolete, yet it is still carried on to as great an extent as ever in many parts of England; and in both countries the practice of burying in churchyards in the centres of populous cities is carried to as great a degree as the extent of the ground will admit.

It is impossible to deny that this practice is a most fearful abuse, and in densely peopled towns and cities it may become a nuisance. The present author, Mr Walker, deeply impressed with all its evils, has undertaken to delineate them in their strongest colours, and has certainly laboured like an enthusiastic advocate in denouncing the practice, and adducing reasons to prove that it ought to be suppressed. He has probably carried his views to an extreme length, and we fear that he may injure a cause otherwise good, by ascribing to the practice evils which we believe it will be extremely difficult to prove originate from that source. At the same time the attempt is laudable and meritorious, and shows that he is at once aware of the advantages that result from a different mode of sepulture, and anxious to improve the condition and atmosphere of towns in this respect.

It is chiefly in large and populous towns that the practice of interring the dead within the precincts of churches, or in the surrounding ground, is productive of injurious effects; and that these effects are not imaginary but are often most hurtful, is proved by ample experience. The former practice especially, viz. that of interring dead bodies within the walls of churches, evidently tends to defile and corrupt the atmosphere of these buildings, and must render it exceedingly hurtful to those who frequent churches for the purpose of divine worship. It is well known that the air of all churches, in which this practice is continued, is excessively damp, and has often been known to give rise to serious ailments. The walls are observed to be covered with a vigorous growth of green Lichens and Confervæ; and in general the soil and floor are abundantly covered with unhealthy-looking Fungi; the timber-work in such churches has been observed to rot very rapidly, and wherever tapestry or other cloth was hung up, it was speedily covered with mould, and rapidly underwent decomposition. The author of the present work very properly observes, that the atmosphere in such churches is ordinarily moist and heavy, in consequence of the sepulchral exhalations, which penetrate through the layers of earth, and also which are frequently extricated in great abundance, when the tombs, graves, and such places are reopened.—(Page 110.)

He further ascribes to these emanations the property of producing bad fevers, plague, dysentery, and a number of other disorders, which spread evidently by contagion. This, however, we must say, appears to be ascribing to such a cause effects which certainly do not always result from it. On the one hand, it is known that fever, plague, and dysentery prevail in situations where there are no dead bodies interred in churches, as in various cities of the Levant, with regard to plague, and various towns in Scotland, with regard to fever; and it is equally certain, on the other hand, that, in various places where the practice of interring bodies in churches and the centre of towns, fever has not been more prevalent or more fatal than situations where this practice is not pursued.

Thus, it is well known that, in London, where the practice of interment within churches and city burying-grounds is very common, fever, certainly, is not more prevalent, nor is it more fatal, than in several other large towns. It has been shown in various articles in this Journal, that the mortality from fever in Edinburgh varies from 1 in 7½ to 1 in 14 or 15, and in Glasgow varies from 1 in 5 to 1 in 16; and yet the practice of interment in churches is scarcely at all followed in either of these cities. It must be further remarked, that, although it were attempted to ascribe the prevalence of fever in Edinburgh or Glasgow to the practice of interring the dead in the church-yards within the precincts of these towns, yet it must be borne in mind that this practice has been going on for centuries to a greater or less extent, whereas it is only at certain periods that fever prevails and produces considerable mortality. While, therefore, we cannot see that these effects can be legitimately traced to the cause to which they are here ascribed, we entirely agree with the author in regarding the practice as most pernicious, as a great nuisance, as a violation of every principle of medical police, and as calculated to render the atmosphere of churches exceedingly unwholesome. It would lead us into two extensive a disquisition were we to follow the author in all the enquiries he has instituted in order to establish the correctness of his different conclusions regarding the hurtful effects of this practice. To a few only of his facts do our limits allow us to direct attention; and in selecting these, we must confine our attention to the state of the burying-places in London.

In the great metropolis there prevails, besides the custom of interring in churches, and the ordinary way of digging graves in churchyards, the practice of interring the bodies of paupers, to the amount of from ten to a dozen or a score, in a single deep grave-pit. A grave constructed in this manner is first dug to the depth of twenty feet, and the bodies are deposited in it successively, as occasion brings them to the burying-ground, until the whole are filled up, at which time, and not before, the grave is covered up. The time which elapses between the deposition of the first body, and the total filling and covering in of the grave, varies in length. In some much frequented burying grounds, where there are many paupers, the grave may be filled in two or three days. In other instances as many weeks may elapse before it is filled and covered in. In the course of this time the bodies first deposited are undergoing decomposition, with extrication of gases, more or less abundantly; and as these are at the bottom of the grave, where there is no ventilation, and where, consequently, they cannot be carried away, the bottom first, and eventually the greater part of the grave, is filled with the gaseous products of decomposition. Of these, carbonic acid gas, hydrosulphurous acid gas, and azotic gas, are perhaps the principal. But whatever they be, it is known that descent into a grave of this kind is, in certain circumstances, productive of fatal effects. Of this accident a good instance is given in the present work, at page 138, as having occurred in the burying-ground of Aldgate Church. In September 1838, the grave-digger had attempted to descend into a grave of this kind, which had been open about four weeks, and in which there was only the body of a single child, and instantly fell upon his back dead. A young man, his assistant, who with several others was attracted to the spot, having procured a ladder, volunteered to descend to the assistance of the deceased. No sooner, however, had he stooped with the intention of applying ropes round the shoulders of the deceased, than he instantly fell back, and was in a moment a lifeless corpse. Another grave-digger made several attempts to descend, but so foul was the air that he was obliged to be drawn up again. Twenty-five minutes elapsed before the bodies could be extracted by means of a hook attached to a rope, and by this time life was completely extinct. It was the opinion of the medical witness that death was produced by suffocation by carbonic acid gas.

It may be said that in this case it would have been easy to have prevented such a catastrophe by throwing into the grave a little water, and sprinkling it with quicklime. The case, however, is important, as showing the nature of the changes which take place, in open graves, and consequently in vaults, and is sufficient to show that the practice should be discontinued.

There is one circumstance which has often struck us with astonishment as never having been adverted to, as a great and serious objection to the practice of having large burying-grounds in the centres of towns and cities. When the soil becomes saturated with the decomposed animal matters, whatever water passes near it, will assuredly carry away some of the elements of the dissolved or suspended animal matter; the water of pump-wells consequently in the neighbourhood of burying-grounds must become more or less impure and more or less hurtful. Mr Walker states, in regard to St Clements Church in the Strand, that the water of a pump-well which was sunk in the year 1807, on the east side of the church, had become so offensive both in smell and taste that it could not be used by the inhabitants, owing, as the author conjectures, to the infiltration of the dissolved products of the putrefaction of human bodies. So many causes may concur in a large city, to contaminate the water which percolates through the soil, that the one now conjectured may not be the right one. It has been ascertained that the escape of coal gas in situations where gas is conveyed in tubes through the soil, has the effect of contaminating water; the vicinity of drains in large towns will present themselves as obvious and effectual causes of contamination. But even granting all this to be the case, it would surely be right, on various grounds, to exclude the operation of a cause of contamination of the water so manifest as that of the solution of dead animal matter.

The decomposition of dead bodies is attended with the extrication not only of offensive and destructive gases, but sometimes with the formation of numerous insects, and other vermin. The following account of the burying-ground of Enon Chapel, on the western side of Clement's Lane, presents a picture not very pleasing, of the salubrity of this locality.

> "It is surrounded on all sides by houses crowded by inhabitants, principally of the poorer class. The upper part of this building was opened for the purposes of public worship about 1823: it is separated from the lower part by a boarded floor; this is used as a burying-place, and is crowded at one end, even to the top of the ceiling, with dead. It is entered from the inside of the chapel by a trap-door; the rafters supporting the floor are not even covered with the usual defence, lath and plaster. Vast numbers of bodies have been

placed here in pits, dug for the purpose, the uppermost of which were covered only by a few inches of earth; a sewer runs angularly across this 'burying-place.' A few years ago, the Commissioners of Sewers for some cause interfered, and ultimately another arch was thrown over the old one: in this operation many bodies were disturbed and mutilated. Soon after interments were made, a peculiarly long narrow black fly was observed to crawl out of many of the coffins; this insect, a product of the putrefaction of the bodies, was observed on the following season to be succeeded by another which had the appearance of a common bug, with wings. The children attending the Sunday school, held in *this chapel*, in which these insects were to be seen crawling and flying, in vast numbers, during the summer months, called them 'body bugs';—the stench was frequently intolerable. One of my informants states that he had a peculiar taste in his mouth during the time of worship, and that his handkerchief was so offensive, that immediately upon his return home, his wife used to place it in water."—P. 154-156.

In the rapid view which the author takes of the principal places of interment in the metropolis, he adduces many examples of similar disgusting and filthy practices. Those facts are sufficient to show that the practice is a great nuisance; but we do not conceive that he establishes the conclusion for which he so strongly contends, that it gives rise to typhous fever.

The principle maintained by Mr Walker is, that the exhalations from animal putrescency are productive of typhous fever, and fevers marked by diminution of power and all the functions of the body, and a general disposition to putrescency both in the solids and fluids; and he informs us, that, in confirmation of this proposition, he had been frequently called to cases of fevers, in an aggravated form, in his immediate neighbourhood, viz. Drury Lane; and consequently, endeavoured to ascertain the causes concerned in the production of the disorder; and he became convinced from many facts, that the grand cause of the evil is the immediate proximity of the burying-places, public, as well as private. (Page 148 and 149). He proves very clearly that the atmosphere is much contaminated, and consequently rendered unfit for healthy respiration, by the practice of accumulating numerous dead bodies in small and confined burying-grounds, and by the custom of frequently opening the ground, so as to receive fresh bodies, while those previously interred, or rather deposited, are still in the course of decomposition. He shows also that, in the neighbourhood of various burying-grounds, cases of typhous fever are rather abundant; and perhaps this may be regarded as evidence to show that contamination of the atmosphere by putrid or putrescent animal matter operates as an accessory cause, by weakening the general strength of persons so exposed. But we do not perceive that any evidence is adduced which would be deemed adequate to prove that such contamination of the atmosphere is a primary or essential cause of typhous fever.

It seems to us, indeed, singular that, after the full evidence adduced upon this point long ago by Dr Bancroft, and more recently by M. Parent-Duchatelet, and founded upon very accurate inquiries and incontestible facts, showing that long exposure to putrescent animal matters is never followed by symptoms of contagious, or putrid, or typhous fever, any one should attempt to revive this opinion in opposition to so much undoubted evidence. Typhous fever has been long observed to prevail not in situations where animal matters are undergoing decomposition so much as in situations where numerous bodies of human beings are aggregated together, not admitting sufficient ventilation, and where they are consequently exposed to the inhalation of air loaded and contaminated with the gaseous excretions of each other.

It must, nevertheless, be allowed, that the practice is both an indecent and disgusting one, and is carried in large and populous cities, like London, to an extent which must render the air quite unfit for continuing the health of living beings. Nothing, indeed, can be more revolting than this practice of accumulating such immense masses of dead bodies in the midst of living inhabitants; and it may be said, without dread of exaggeration, that the numbers of the former greatly exceed those of the latter in many localities in London. In this sense, indeed, the great metropolis is more entitled to the epithet of the city of the dead than the city of the living. Our readers who have any doubts upon this point may peruse the following passage, in which the author gives a brief recapitulation of the results of his inquiries.

"Here I may advert to the burial places in my own immediate vicinity. The 'Green Ground' in Portugal Street has been used for interment for a period beyond 'the memory of man.' Enormous numbers of dead have been deposited here, and yet the ground remains persistently level. It would be desirable to obtain an account of the number; no doubt the particulars are on record, and could be furnished, of the burials within a given period. Should it appear that the ground has been overcharged, information should be given of the disposal of the earth—necessarily removed to admit the continuous deposits. Bulk must occupy space. If removals of previous occupants should occasionally have been effected, it would be desirable to know, by what authority?—at what period since the inhumations?—and under whose immediate sanction these transfers have been made? The general question might be asked, where have the remains of those removed been deposited?—in what manner have the materials of which the coffins were made been used or appropriated? Unfortunately it has long been notorious, that, through the criminal neglect of survivors, the most disgusting violations of the dead have commonly passed off unnoticed and unpunished. On the surface of many grounds I have repeatedly seen coffin-wood piled up for removal, and I could not refrain from wondering that this barefaced insult to the living, necessarily preceded by a disgusting exposure, and too frequently dismemberment of the dead, could have taken place with impunity, and that the perpetrators of these acts should escape unpunished. But these men, for necessity may have compelled them to the employment, are comparatively innocent. The abuse—the criminality of the act, rests with those who superintend or connive at the transgression.

" The above remarks are applicable to a vast majority of places I have examined, and of which I have not considered it necessary to detail the particulars. They indisputably prove, that the present system of inhumation, and it is not confined to the metropolis, is grossly immoral, and demands—imperiously demands, the interference of the legislature to abolish or reform it. It might appear invidious to have selected the burial-grounds in Portugal Street for particular remarks. I have no intention to make this place the ruling theme of observation, because I am quite prepared to prove that it is not an isolated instance ; nor do I believe that it is a particular exception. It first occupied my attention in my professional inquiries, and I regret to find that it is but a specimen of the almost universal practice. The grounds in Russell Court and Drury Lane, the former belonging to St Mary Le Strand, and the latter to St Martin's in the Fields, are excessively crowded with the remains of the dead, more especially that in Drury Lane, luxuriant in rank vegetation high as men's shoulders, its surface broken, unseen, and its general aspect repulsive. It is a shabby, unchristian depository for the dead ! an abomination to the living !

" The burying-ground in Russell Court measures 4,300 superficial feet, and that of Drury Lane about 11,000 superficial feet. It would not be difficult to state a limit to their capabilities. In the calculations made by eminent French authorities not more than 150 bodies should have been interred in the one, nor more than 500 in the other. Will the parish authorities confirm or contradict this calculation ?

" But what shall we propose upon the subject of *Private Burying Grounds.* Unquestionably, that they be immediately and for ever closed ; and that the proprietors, presuming that they have not acted illegally, receive a just compensation for their interest in the land only ; and that the dead there deposited remain undisturbed until a general cemetery or cemeteries be appointed to receive them after a decent exhumation, and a solemn and appropriate transmission. It is true that a correct registry of burials may now be anticipated ! Why not a registry of the burial grounds (not one of which should be *private*)—*the situation—the extent of ground—the numbers buried—and the period they have remained open ?* A particular space can only receive a limited number ; that number having been deposited, the ground should be closed, and no *disturbance* should on any account be permitted, but under the direction of an approved and responsible superintendant. I have been led to these remarks from considering the state of the private grounds which have fallen under my own observation, and, as examples are always more influential than vague generalities, I would refer my readers to the particular description I have given at page 154 of the management of the space under the floor of Enon Chapel in Clement's Lane.

" This space measures in length 59 feet, 3 inches, or thereabouts, and in width about 28 feet, 8 inches, so that its superficial contents do not exceed 1700 square feet. Now, allowing for an adult body only 12 feet, and for the young upon an average 6 feet, and supposing an equal number of each to be there deposited, the medium space occupied by each would be 9 feet: if, then, every inch of ground were occupied, not more than 189 (say 200 in round numbers) would be placed upon the surface; and admitting (an extravagant admission most certainly) that it were possible to place six tiers of coffins upon each other, the whole space could not contain more than 1200; and yet it is stated with confidence, and by credible authority, that from 10,000 to 12,000 bodies have been deposited in this very space within the last sixteen years."—P. 233-237.

These statements are quite sufficient to establish the fact of a great and intolerable nuisance in the heart of a populous city, and which ought by every means to be abated without delay. It is not necessary to prove that the practice is capable of producing positive disease. All those who understand the mode in which disease takes place, and the nature of the causes upon which it depends, are well aware that, though various offensive and noisome processes may not give rise to positive disease, yet, acting upon the lungs, and thereby upon the general system, they impair strength, derange health, and shorten life. These facts are so obvious, that we conceive it is quite unnecessary to spend time in demonstrating their truth. But if the public authorities in London and other large towns are not satisfied of the slow and progressive, but certain homicide, which they are authorizing among the inhabitants, they have only to look into the present volume to obtain satisfactory evidence of the truth.

To conclude, the only effectual way of remedying the whole of these evils is to put an immediate stop to the practice of interring within churches and in the church-yards of populous towns.—Large, extensive, and well-aired places, sufficiently well enclosed to satisfy the public as to their security, ought to be provided, at convenient distances, from large towns for receiving the remains of the dead; and in this manner there is no doubt that the health and strength of the inhabitants would be materially improved, and if mortality were not diminished, life at least would be spent in greater freedom from disease.

PART III.

MEDICAL INTELLIGENCE.

ANATOMY AND PHYSIOLOGY.

Temperature of the Human Body in Intermittent Fevers. By M. GAVARRET. (*L'Experience*, No. cvi. 1839.)—M. Gavarret has made numerous observations on the temperature of the human body during the different stages of intermittent fevers, as well as during health, and from these it appears, that even during the stage of rigor the heat of the body is exalted from two to three degrees above its usual temperature. In the hot stage he has found the temperature still more elevated, but never more than one degree above that attending the stage of rigor; whilst in the sweating stage, though the temperature was above that of health, it was much below that of the two preceding stages.

On the Sympathy between the Cerebellum and the Testes. By Dr J. BUDGE of Altenkirchen. (*Muller's Archiv*, 1840.)—Gall placed the organ of the sexual appetite in the cerebellum; but though the attention of physiologists has been, since then, repeatedly directed to this subject, they have not yet arrived at any definite result. For, even if we collect all the known cases of diseases of the cerebellum, as Burdach has done, we shall find, that, though an actual affection of the sexual organs has occurred in no small number of the cases, yet that in the greater number no such affection existed. It appeared to Dr Budge, that a more certain and incontrovertible kind of proof, viz. that of experiment, was wanted; and he thinks that he has at length succeeded in demonstrating by experiments on numerous animals, that this influence of the one organ upon the other is of the most simple, distinct, and certain nature.

Old cats were the animals selected, as those best adapted for experiment, and the effects were observed both during life, and immediately after death. The experiments were repeated so often that there did not exist the least doubt in regard to the results; and though in some animals, the phenomena were far more distinct than in others, yet they were in all so similar that the narration of one may serve to illustrate what took place in all.

In a twelve year old cat, which was killed by wounding the heart, the skull was removed as quickly as possible, the abdominal cavity opened, and both testicles with their spermatic cords and *vasa deferentia* exposed. Not the slightest motion was observed in the testicles. The cerebellum was now stimulated with the point of a knife; and this had scarcely been done for more than three seconds when one testicle raised itself up, and moved from the spermatic cord on which it had lain, so as to form nearly a right angle with it; at the same time it became more and more tense. The more the cerebellum was irritated the more the testicle moved. The cerebellum was stimulated here and there, but the two testicles never moved at once. The cause of this, however, was soon discovered. When the right lobe of the cerebellum or the right commissure were stimulated, the left testicle always moved; when the left lobe and the left half of the commissure were stimulated, then as regularly the right testicle moved. The movements of the testicles were thus completely under control, and the stimulation of the cerebellum caused motion in these organs fully half an hour after life was apparently extinct.

Dr Budge is of opinion that the cerebellum is the part where the nerves of the testicles have their terminal point; that they cross each other in the brain as those of all the rest of the body; and that they must lie tolerably superficial in it, because irritation of the deeper parts of the cerebellum did not succeed in producing motion of the testicles. He thinks it even probable that the union of the nerves takes place in the region of the first cervical vertebra, because stimulus of this part of the cord is very often accompanied by erection and discharge of semen, as in the hanged, &c.

Case of Precocious Puberty. By THOMAS B. PEACOCK, Esq. (*London Medical Gazette*, January 3, 1840.) Jane Jones was an unusually large child at birth, and grew rapidly; and some time before she attained the age of three years, her breasts were observed to be unusually large. When she was about five years old they underwent a still greater development; the pudendum acquired greater fulness, and the catamenia made their appearance, since which time they have continued to recur regularly. The mons and labia, though without hair, were much more tumid than is natural in a child of her age.

She is now seven years of age; her form is that of a full-grown woman, being broad across the chest, breast, and pelvis; and her limbs are full and rounded. Her face, more particularly the lower part, is large, and her look heavy and childish. She measures 4 feet 3¼ inches, and 29 inches round the chest; her weight is 72 pounds avoirdupois. Her teeth are all of the temporary set, with the exception of the first permanent molar, and the two central incisors of the lower jaw. Her breasts exceed the usual size of these organs in unmarried adults, the gland is large and firm, and they possess the erected nipple, and in some degree the dark areola, of the pregnant state. The mons is very prominent, and presents a considerable growth of hair. Her mother states that the catamenia appear at regular intervals of a month, continuing profusely for two days, and partially during two others, and that the secretion cannot be distinguished either in quality or amount from that of other females. At the catamenial periods, the eyelids acquire a dark hue, and she experiences the ordinary attendant lumbar pains; indeed, she exhibits the usual signs of one in whom this function has become naturally established, and her general appearance is fully that of a girl of thirteen years of age. The mental faculties are not more highly developed than in children of the same age; and in her amusements she is as childish as those of her companions. She, however, displays a degree of modesty in her conduct towards males unusual in children of her age.

On the growth of the Hair. By M. MAUDL. (*Comptes Rendus*, 27th January 1840.)—M. Maudl, from the observation of some phenomena which he has observed with regard to the growth of hair, is inclined to arrive at a different conclusion from that usually adopted. In individuals who have had their hair recently cut, he observes that each hair preserves its diameter to its free end, which presents a truncated extremity, where the eye may distinguish the section both of the cortical part and that of the internal canal. But if these same hairs are examined after a longer interval, each hair is found to be terminated by a pointed extremity more or less long, but with its extremity closed. This change of form M. Maudl considers to be the result of a vital process, and as proving the possibility of a movement of fluids in the interior of the hairs. He thinks this opinion is still further supported by the fact, that when hair is kept long, instead of the formation of a pointed extremity, obliteration of the extremity of the canal alone takes place, which he supposes to be caused in all probability by the difficulty of the movements of the fluids.

Flattening of the Cranium among the American Indians. (*Sporting Excursions in the Rocky Mountains.*) By J. K. TOWNSHEND, Esq.—"A custom prevalent, and almost universal amongst these Indians, (the Klikatats), is that of flattening, or mashing in the whole front of the skull, from the superciliary ridge to the crown. The appearance produced by this unnatural operation is almost hideous, and one would suppose that the intellect would be materially affected by it. This, however, does not appear to be the case, as I have never seen, with a single exception, (the Kayouse), a race of people who appeared more shrewd and intelligent. I had a conversation on this subject, a few days since, with a chief who speaks the English language. He said that he had exerted himself to abolish the practice in his own tribe; but although his people would listen to his talk on most subjects, their ears were firmly closed when this was mentioned; they would leave the council fire, one by one, until none but a few squaws and children were left to drink in the words of the chief. It is even considered among them a degradation to possess a round head; and one whose caput has happened to be neglected in his infancy, can never become even a subordinate chief in his tribe, and is treated with indifference and disdain, as one who is unworthy of a place amongst them.

The flattening of the head is practised by at least ten or twelve distinct tribes of the lower country, the Klikatats, Kalapooyahs, and Multnomahs of the Wallammet and its vicinity, the Chinooks, Klatsaps, Klatstonis, Kowalitsks, Katlammets, Killamooks, and Chekalis of the lower Columbia and its tributaries, and probably by others both north and south. The tribe called Flat-heads, or Salish, who reside near the sources of the Oregon, have long since abolished this custom.

The mode by which the flattening is effected varies considerably with the different tribes. The Wallammet Indians place the infant, soon after birth, upon a board, to the edges of which are attached little loops of hempen cord or leather, and other similar cords are passed across and back in a zig-zag manner through these loops, enclosing the child, and binding it firmly down. To the upper end of this board, in which is a depression to receive the back part of the head, another smaller one is attached by hinges of leather, and made to lie obliquely upon the forehead, the force of the pressure being regulated by several strings attached to its edge, which are passed through holes in the board upon which the infant is lying, and secured there.

The mode of the Chinooks, and others near the sea, differs widely from that of the upper Indians, and appears somewhat less barbarous and cruel. A sort of cradle is formed by excavating a pine log to the depth of eight or ten inches. The child is placed in it on a bed of little grass mats, and bound down in the manner above described. A little boss of tightly plaited and woven grass is then applied to the forehead, and secured by a cord to the loops at the side. The infant is thus suffered to remain from four to eight months, or until the sutures of the skull have in some measure united, and the bone become solid and firm. It is seldom or never taken from the cradle, except in case of severe illness, until the flattening process is completed.

I saw to-day a young child from whose head the board had been just removed. It was, without exception, the most frightful and disgusting object that I ever beheld. The whole front of the head was completely flattened, and the mass of brain being forced back, caused an enormous projection there. The poor little creature's eyes protruded to the distance of half an-inch, and looked inflamed and discoloured, as did all the surrounding parts. Although I felt a kind of chill creep over me from the contemplation of such dire deformity, yet there was something so stark-staring and absolutely queer in the physiognomy, that I could not repress a smile; and when the mother amused the little object and made it laugh, it looked so irresistibly, so terribly ludicrous, that I and those who were with me burst into a simultaneous roar, which frightened it and made it cry, in which predicament it looked much less horrible than before."

Absence of the Mammary Gland in a Woman. By Dr FRORIEP. (*Froriep's Notizen*, x. 1839.)—This remarkable case occurred in a well-formed woman, of about 30 years of age, who gave birth to a healthy infant in the month of December, but died herself of an attack of peritonitis eight days afterwards.

On dissection, it was found that the mammary gland of the left side was well developed, and full of milk; that of the right side was entirely wanting. The skin in this region was smooth, soft, and did not adhere to the subjacent parts; no traces of a nipple were apparent, and, in spite of a minute dissection, not a single granulation could be found which indicated the least rudiment of a gland.

Other anomalies not less remarkable existed on the same side. The third and fourth ribs, in place of ending at the sternum, terminated in a line with the anterior margin of the scapula; these two ribs had their place supplied on the anterior part of the chest by a tendinous structure of sufficient resistence to hinder the lung from being pushed forwards in the form of a hernia. The cartilages of these ribs, however, were found attached to the corresponding part of the sternum, but they were connected together, and also with those of the fifth and sixth ribs. The sternal portion of the greater pectoral muscle, and the whole of the lesser pectoral muscle were awanting, as well as their tendinous attachments, not the least trace of which could be detected. The *latissimus dorsi* wanted its two digitations, which are usually attached to the third and fourth ribs. It is unnecessary to say that the intercostal muscles proper to these ribs were awanting. Dr Froriep explains these remarkable appearances by supposing that the developement of the parts had been arrested during the fœtal life by the pressure of the arm upon the corresponding portion of the thorax.

MEDICAL PATHOLOGY.

Spontaneous Rupture of the Spleen. By Dr NÆCKEL.—(*Medicinische Zeitung*, May 1839.)—A young man, of about 25 years of age, had an attack of diarrhœa, which was not relieved by opium or saturnine preparations. After five days continuance, the abdominal pains became so severe, that he was forced to confine himself to bed. Next day he was seized with a sensation of sinking, cold sweats, &c., and died in a few hours. On inspection of his body forty-eight hours after death, a large quantity of blood was found effused into the cavity of the abdomen and pelvis, which had proceeded from an angular rent of the spleen of about four lines in extent, situate at the inferior margin of its anterior or external surface. The spleen was about five inches long by four broad; of a livid colour, and with its tissue much softened.

Congenital Cyanosis caused by the Aorta originating from both ventricles of the Heart. By Dr C. F. GRAVINA.—(*Schmidt's Jahrbucher*, July 1839.)—A boy, 9 years of age, pretty stout and well-formed, was from his birth of a leaden colour, with his lips and nails blue, and suffered from a violent and continual palpitation of the heart, and short rapid respirations. On the least exertion these symptoms were much aggravated; to such an extent, indeed, as to force him to lie down, and not move in the least till he palpitations became calmed; at the same time the whole body became of a bluish colour, and was covered with sweat. When sitting or lying the child felt well, and could use slight exertion. On percussion the chest sounded everywhere clear. The respiratory murmur was heard distinctly by means of the stethoscope over all the chest; but in the precordial region two other sounds besides those of the heart were recognized. One of these abnormal sounds resembled the purring of a cat, and was heard during the systole of the heart; the other, which appeared to accompany the contraction of the auricles, was so clear and sonorous, that it was heard over the whole of the right side of the chest; on the left side, however, it was scarcely heard. When the boy was in a state of repose, his pulse beat from 78 to 84 in the minute; but on the least exertion rose to 100 or 105. The external veins presented neither turgescence nor pulsation. The abdomen was somewhat swelled, but soft; the liver appeared to be enlarged; but the functions of the intestines and urinary apparatus were normal. The boy died suddenly, in consequence of an attack of convulsions and dyspnœa.

On dissection of the body the following appearances were observed. The lungs were of a violet colour, regular in their form, and crepitated on pressure. The heart was of the usual size; the right ventricle was nearly twice as large as the left, but its walls were of their ordinary thickness; the left ventricle was smaller than common; the auriculo-ventricular openings in both ventricles presented their usual appearance; the *foramen ovale* was closed. The fleshy septum common to the two ventricles did not reach quite to the base of the heart, but was deficient at that point close to which the aorta originates, leaving a circular communication between the two ventricles. This opening was largest on that side which communicated with the right ventricle; but was somewhat contracted on that of the left. The aortic orifice was much dilated, as were also the semilunar valves, which appeared proportioned to the increased dimensions of the aortic orifice. The pulmonary artery was very much contracted, but its walls were unaltered. The liver was very large and hypertrophied. The spleen was normal.

Complete Transposition of the Viscera. By M. V. Parisot of Nancy. (*Archives Generales de Medecine*, June 1839.) The body of a young man, of 25 years of age, was brought to the dissecting-rooms of Nancy, and presented an example of a complete transposition of the organs of the body.

The heart occupied the right side of the thorax, with its apex pointing to the right, and corresponding to the fifth intercostal space. The aortic ventricle lay to the right, and the pulmonary ventricle to the left side, and all the divisions of the circulating system followed the same transposition. The aorta was placed to the right, and was crossed by the pulmonary artery, which passed from left to right. The arch of the aorta passed over to the right, and the thoracic and abdominal aorta descended on the right side of the vertebral column. The *arteria innominata* was met with on the left side of the body, whilst the carotid and subclavian arteries, which arise from the aortic arch, were found on the right side. The right subclavian vein was much longer than the corresponding vein on the left side, in consequence of the position of the *vena cava superior*. The *vena cava inferior* ascended on the left side of the vertebral column, and traversed the diaphragm on the left side. The *vena azygos* also occupied the left side of the veretebral column.

The right lung was not divided into lobes, and was consequently composed of but a single lobe. The left lung was composed of two lobes.

The œsophagus inclined to the right of the vertebral column, having the aorta on its right side. The cardiac orifice of the stomach was on the right side, and the large cul-de-sac of the stomach filled the right hypochondrium; the pylorus was directed to the left; the duodenum was also on the left, with its concavity looking to the right; the cæcum occupied the left iliac fossa, whilst the sigmoid flexure of the colon was in that of the right, the rectum passed down nearly in the centre of the sacrum. The liver filled all the left hypochondrium, the lesser lobe to the right and the larger lobe to the left side, as well as gall-bladder. The spleen was on the right side of the body. The right testicle hung lower than the left. The diaphragm presented an analogous transposition; the opening for the passage of the *vena cava inferior* was to the left; that which gave passage to the aorta to the right. The left recurrent nerve passed round the subclavian artery, and the right recurrent the arch of the aorta.

Hydrophobia communicated through the mother's milk. By S. H. STEELE, Esq. (*London Medical Gazette*, 25th October 1839.)—On the 20th of May last, two ewes were severely torn by a dog labouring under hydrophobia. One of these was giving suck at the time to two lambs, and the other to one lamb; and the lambs were allowed to remain with them for about two weeks after the receipt of the bite, after which time they were separated. About six weeks after the receipt of the bites, the ewe which had been most severely torn evinced the following symptoms; she was observed pawing the ground, and striking at the other sheep with her head, like a ram; a circumstance very uncommon in a ewe. She was occasionally seized with convulsions, and continually turned her head from side to side in a convulsive manner. The bowels were much constipated, but what she did pass was of a red colour; and she refused all food. The symptoms continually increased in violence for about eight days, when she was destroyed. A day or two afterwards the other ewe became similarly affected, and it was found requisite to destroy her in seven days. About ten days after the death of the last sheep the lambs were similarly attacked; they butted at the other sheep, at the hurdles, and every thing else which came in their way, and were continually tearing the wool from their sides. No uneasiness, however, was expressed at the presence of water in a ditch, part of which was enclosed by the hurdles within which they were confined. They were all killed within a week after the appearance of the symptoms, as there appeared no chance of their recovery. The great singularity of these cases is the fact, that the lambs became rabid merely from sucking ewes which had been bitten by a mad dog.

Congenital Hernia of the Diaphragm, with a portion of the Small Intestines in the Left Thoracic Cavity. By Dr MURPHY. (*Dublin Journal*, July 1839.)—M. C., after a labour of moderate duration, was delivered of a still-born child. There was no difficulty in the labour, nor any apparent cause for such a result. The heart was pulsating strongly, rather to the right side, but there was not the slightest attempt at respiration, and every effort to excite it failed. The child was rather above the average size; both wrists were distorted, and it had *spina bifida*.

On opening the thorax and abdomen, the cause was at once explained. The whole of the left thoracic cavity was filled with the small intestines, the development of the lung on that side having been arrested almost at its commencement. The heart was larger than usual, but nearly in its natural situation. The right lung was of the ordinary size, having the inferior lobe in close contact with the supra-renal capsule. The diaphragm was deficient posteriorly, but much more so on the left than on the right side.

Disease of the Posterior Columns of the Spinal Cord, Sensation remaining unimpaired. (*London Medical Gazette*, February 7, 1840.)—Mr Edward Stanley brought before the Royal Medical and Chirurgical Society of London, a well-marked case of disease, strictly limited to the posterior columns of the spinal cord, yet producing phenomena at variance with the doctrine of the distinct influences of the anterior and posterior columns of the cord on the faculties of motion and sensation.

The disease, which was not the result of injury, commenced about three years before the patient's admission into St Bartholomew's Hospital, with impaired motion of the lower extremities, at first slight, but progressively increasing, so that at the time of his admission he could only succeed by a great effort in raising his legs from the ground whilst sitting on a chair. Before death, the loss of motion became complete in each lower limb, throughout its whole extent. In no part, however, was there any defect of sensation, scratching, pricking, or pinching the skin, being attended by sensation as acute as in a sound limb.

On dissection, no signs of disease presented themselves excepting in the spinal chord. Here, contrary to the anticipations of many persons by whom this case was observed, no disease whatever was found in the anterior columns of the cord. An extensive change of structure and colour was, on the contrary, manifested in the posterior columns, from the pons to the lower end of the cord. "The value of this case, says the author, consists in the distinctness of its phenomena being acknowledged by many competent observers to have been such as they are recorded."

Dr Budd related a case where similar phenomena were observed. A patient who had caries of the spine, lost the power of motion in the inferior extremities, the power of sensation remaining entire. On dissection, the anterior columns of the spinal cord were found apparently sound, whilst the posterior, at the seat of the disease, were softened and nearly fluid.

MEDICAL THERAPEUTICS.

New and successful Treatment for the prevention of Hydrophobia; by Dr Miroff of St Petersburg. (*L'Ami de la Santé.*)—Dr Miroff strongly recommends the following treatment to be followed by those who have been bitten by rabid animals, asserting that it has been so successful in his hands that in not a single person who had been subjected to the treatment was hydrophobia developed. His paper on the subject contains the narration of many cases of persons who had been bitten by rabid dogs and wolves, and though many of them had been closely observed for more than a year, no bad results had followed the bite. His treatment is continued for the space of two months. As soon after the bite as possible, the person is put into a vapour bath of 50° Cent. and given to drink a strong decoction of sarsaparilla and guaiac, whilst the wound is rubbed with the ointment of the red precipitate of mercury. Two pints of this strong decoction is ordered to be drunk daily, and the sore is dressed till it heals with the above ointment. The patient has a bath every other day during the first week, every third day during the second and third week, and then only twice a week till the two months are past.

On the External Use of Colchicum By Thomas Laycock.—(*London Medical Gazette,* June 8, 1839.)—Tincture of the root of colchicum, used as a liniment, Mr Laycock has found to be efficacious in alleviating gouty and rheumatic affections. The relief is experienced in from two to thirty minutes after the application of the remedy. It is remarked that a sensation of warmth, or of tingling, or of formication, follows the application. In some cases a few pimples appeared. He has found that it sometimes succeeds in producing a cure when all other means have failed; and it was generally successful in nine out of every ten cases of gout or rheumatism.

On the Analogy between the External and Internal Effects of Certain Medicinal Substances. By Robert Dick, M. D. Glasgow.—Sir, I desire to call the attention of the profession to an analogy, somewhat neglected, which exists between the operation of certain substances, when administered internally, and when applied externally. I have recently directed some attention to this matter, and have derived some useful practical hints in consequence.

Nitre is employed, both externally and internally, as a refrigerant. But as an external application, it is merely the lower temperature which it causes in the lotion-water in which it is dissolved that is believed to constitute, and which in fact constitutes, its refrigerant property.

But there are other substances which obviously exert a medicinal effect, quite independent of temperature, when applied externally. I shall select in illustration, one which I have made the subject of frequent experiment, namely, tartar-emetic. In conjunctive inflammation, I have found a solution of this, in the proportion of a grain or so to the ounce of water, a most potent local antiphlogistic, when dropped on the eyeball. I have found it most useful also, more strongly proportioned, in erysipelas, and almost every species of cutaneous inflammation, in phlegmonous tumours, &c.

Tartar-emetic is also useful, as I have frequently found, in *aridity* of the conjunctiva. It seems to relax the spasm which binds the extremities of the mucous ducts, which discharge on that membrane. But, in the latter case, a watery effusion of ipecacuan will be found superior.

I could furnish many other examples, from experiments even on brutes, In page 106 of my work on Diet, &c. I remark, in note, "I may take occasion to state, that I have lately found ipecacuanha to be an excellent and safe emetic for leeches, as well as for the human subject. It obviates the necessity of what is called "striping them," as well as of applying to them salt or vinegar, which latter method, by irritating and injuring their mouths, prevents them from readily biting again, while the former is apt totally to injure, and frequently to kill them. Ipecacuanha applied along the back of a leech gently sickens it. As leeches are sometimes, especially when ordered in large numbers, an expensive medicine for the poor, I conceive that this suggestion, whereby they may be preserved healthy and uninjured during repeated use, is not altogether unimportant."

I simply, at present, direct the attention of your readers to this subject capable, as it is of immediate practical application. At a future period, I, shall submit the matured results of my continued researches and trials.—I am, &c.

On the Treatment of Phthisis by Hydrocyanic Acid. By M. FORGET. (*L'Experience*, 14th November 1839.)—Professor Fantonetti of Pavia, a short while ago, published a paper on the curative effects of hydrocyanic acid in chronic inflammation of the lungs, but more especially in phthisis. He related a number of cases where not only were the lungs tubercular, but large caverns were detected, accompanied by hectic fever and marasmus, and yet these cases recovered perfectly in the space of from fifteen days to three months; a result he attributed entirely to the administration of the hydrocyanic acid. The acid which he used was prepared according to the process recommended by Magendie, and was administered in doses of two drops, progressively increased to fifteen.

M. Forget, who doubted the accuracy of the results obtained by Professor Fantonetti, repeated the experiments in eight undoubted cases of phthisis, but was forced to arrive at a very different conclusion. In three of the cases death took place with as much rapidity as if the disease had been left to its natural course. In the five others, no amelioration was noted in the progress of the symptoms, with the exception of a slight alleviation of the cough in two cases; but in these cases vomiting was induced. Many of the patients also complained of wakefulness.

M. Forget repeated the same experiments on eight other patients with the same want of success.

Solution of Urinary Calculi. (*Archives Generales de Medecine.*) Dr Charles Petit has lately made numerous experiments on the solvent powers of the waters of Vichy over urinary calculi. The result of these researches is, that calculi of uric acid, and of the ammoniaco-magnesian phosphate, when placed in this mineral water, lose, the first 53 per cent. and the last 60 per cent. of their weight. The loss is in the inverse ratio of their hardness and their cohesion. A very important result, however, is, that the calculi of the ammoniaco-magnesian phosphate suffer from this mineral water a true disintegration of particles, and become more friable. M. Berard has repeated these experiments, and arrived at the same conclusions. Numerous experiments were also performed on patients afflicted with various calculous complaints, the result of which was highly satisfactory. Those afflicted simply with gravelly complaints were, by the use of the mineral water of Vichy, relieved of all their uneasy feelings, and the formation of calculi was prevented. In those, again, who presented all the usual symptoms of urinary calculi, but the presence of which were not ascertained by sounding, the waters of Vichy caused the expulsion of gravelly detritus, speedily followed by the disappearance of the symptoms of stone. In those in whom a urinary calculus of considerable dimensions was ascertained to exist by sounding with a catheter, the use of the mineral water appeared to cause a diminution of its volume; a fact, in one case, ascertained by examination after death. It may be stated that the waters of Vichy consist of a pretty strong solution of carbonate of soda in a water highly charged with carbonic acid.

On the Adulteration of the Sulphate of Quinine. (*Journal de Pharmacie*, January 1840.)—The recent rise in the price of sulphate of quinine has induced many unprincipled venders of drugs to adulterate it with various ingredients; to such an extent, indeed, has this been carried, in some instances, that not more than a fifth part of what was sold as sulphate of quinine really consisted of that substance. M. Vallet found that the substance chiefly used for the adulteration of the sulphate of quinine was Mannite, a substance similar in external appearance to the sulphate of quinine, but destitute of all the valuable properties for which quinine is so justly celebrated. He found, however, that the adulteration could be with great ease detected by means of pure alcohol, which dissolves the quinine alone, but leaves untouched the mannite, which, however, is freely soluble in water and of its characteristic sweet taste.

M. Dubail has also arrived at the same conclusions as M. Vallet, and, in pursuing his investigations, met with one sample of sulphate of quinine, which, though presenting all the external characters of the genuine unadulterated drug, both as regarded its lightness and silky appearance, did not contain above a sixth part of its weight of sulphate of quinine. The rest was composed of mannite, insoluble in alcohol, but soluble in water, and of a sweet taste.

M. Pelletier has found that that which is sold in sealed packages, with the impress of his own seal, has also been subjected to adulteration, but the substance used in this instance is gypsum. The same test, however, viz. the solubility in alcohol, applies to this case, so that every druggist would do well to apply this simple test to the samples of this drug before purchasing.

SURGICAL PATHOLOGY AND SURGERY.

Scrofulous Ophthalmia successfully treated by Hemlock. (*Wochenschrift fur die ges. Heilkunde*, April 1839.)—Dr Kopp of Hanau strongly recommends the employment of the extract of conium in the treatment of scrofulous ophthalmia. His formula consists in dissolving one drachm of the extract of conium in four drachms of the spirituous water of cinnamon, and of this he administers four drops three times daily to children of two or three years old, adding a drop every day to each dose so long as the medicine is continued. Professor Otto of Copenhagen says he has cured more than thirty cases of scrofulous ophthalmia by this method. He has increased the dose to thirty-five drops without its being followed by any hurtful consequences.

On Penetrating Wounds of the Heart. By J. A. JOBERT.—(*Archives Generales*, Sept. 1839.)—Three interesting cases of penetrating wounds of the heart are related, where the persons lived after the receipt of the injury from twelve hours to no less than ten days. In all the cases the wound of the heart was indicated by a peculiar whizzing sound, precisely similar to that which exists in varicose aneurism; and from its presence being recognized in all these three cases, M. Jobert thinks it might be regarded as a diagnostic mark of the presence of a penetrating wound of the heart. He relates several cases which have been published by other authors, where persons had lived for years after this organ had been wounded, opportunities having in many of these cases occurred of confirming the diagnosis by examination after death. He regards, therefore, a wound of the heart as not necessarily fatal, and gives numerous directions of the mode in which the treatment may be best conducted. Of these, bleeding, both general and local, the local application of cold, and the administration of such remedies as tend to reduce the force of the circulation, and abate the tendency to hemorrhage, are the chief.

Successful Blepharoplastic Operations. (*Ammon's Monatschrift*, Bd. i. Heft i. 1839.)—Several interesting cases of restoration of the eyelids by operation have been lately related in the German journals, and, as the operation is relatively new to this country, the following cases cannot fail to interest.

1. A healthy man, of about 30 years of age, observed a small fissure on his left lower eyelid, near the internal angle, which appeared there without known cause. He paid no attention to it at first, but after some little time it inflamed, became covered with a thick crust, beneath which appeared an extensive ulceration; the conjunctiva inflamed, and ectropium followed. Various curative means were employed without effect, and even excision of the diseased portions did not stop the progress of the malady. The patient then applied to Professor Beck, who found the ulcer presenting a bleeding extremely painful surface, a malignant aspect, and having all the characters of a cancerous ulceration; it occupied the internal angle of the eye, a part of the *caruncula lachrymalis*, and had destroyed the whole of the lower eyelid. The complete removal of all the diseased portions, and the consecutive restoration of the eyelid according to the method of Dieffenbach, appeared to be the only plan which promised success. The operation was, therefore, performed in the following manner. Two incisions were made at the commissures of the eyelids, above the diseased portions, and the upper eyelid dissected back to a small extent. Two other incisions from these angles were then carried downwards, so as to unite at an acute angle on the cheek, and include the whole of the diseased mass, which was then carefully dissected out. A horizontal incision was then carried from the external angle of the eye towards the temple, to an extent equal to the length of the eyelid which had been removed, and a triangular portion equal to the size of that which had been removed with the diseased mass, was cut out from the lower surface of the horizontal incision. On being carefully dissected back, and turned round, it was found to fit exact-

ly the site of the lower eyelid and diseased mass which had been removed. The flap was kept in its place by sutures; and in a few weeks the union was complete, and the cicatrization of the wound on the cheek scarcely perceptible. It was then observed that the external palpebral commissure was so tense that the eyeball could not be sufficiently uncovered, unless the patient pulled down the artificial lower eyelid with his fingers. To remedy this defect, an incision was carried for a little way across the commissure in the line of the opening of the eyelids, and the conjunctiva drawn forwards, and attached by suture to the upper surface of the incision, so as to make this portion part of the upper eyelid. A similar portion of conjunctiva was also drawn forwards, and fixed by suture to the lower half of the incision; and after cicatrization the eyelids presented their usual appearance both with regard to their extent and direction. The lower eyelid did not become inverted, but remained free and soft at its upper or free margin, and did not incommode the eyeball in its motions.

2. A small tumour developed itself during the summer of 1835 on the free margin of the right upper eyelid of a scrofulous infant of nine years of age. It rapidly grew larger, became the seat of sharp lancinating pains, and the palpebral conjunctiva became inflamed. At the end of a few months this tumour had attained the size of a walnut, became the seat of an unhealthy ulceration, which discharged blood and fœtid ichorous fluid. No doubt remained as to the disease being of a cancerous nature. The base and the internal fourth of the eyelid were sound, but externally the turgescence extended to the palpebral commissure. Professor Schwærer operated in the following manner. The diseased mass was included between two incisions carried round it, and entirely removed; and from the external angle of the eye on the external side of the eyebrow, a flap was dissected off, leaving it connected by a slender neck, and being turned round was carefully applied to the space from which the diseased mass had been removed and fixed by sutures. Adhesion took place by the second intention. After the adhesion was completed, the new eyelid appeared to be well formed, and was moveable at will.

3. A man, 54 years of age, had for ten years suffered from venereal affections, which had produced ulceration of the bones of the face and various ulcers which had considerably injured the left eye. The whole of the under eyelid was destroyed, with the exception of a small portion on the internal angle, which was, however, completely turned outwards, and exposed the whole of the conjunctiva. The cicatrices had also drawn down the upper eyelid at its external margin. The eyeball was in a state of constant inflammation. To remedy this, Dr Burrow of Konigsberg performed the following operation. After having removed a considerable portion of conjunctiva, which was altered in its texture, and presented a bleeding surface extending from one angle of the eye to the other, he dissected from the cheek a flap, the pedicle of which was attached on the side of the nose, and applied it accurately to the pared surface, and fixed it there by three twisted sutures. The cure was completed by the fourteenth day, and the new eyelid fulfilled completely the end proposed.

Extirpation of the Clavicle. By Professor Regnoli of Pisa. (*Annali Medico-Chirurgici di Roma,* June 1839.)—A man of about 34 years of age, when lifting a sack of grain, was seized with a sudden pain in the left shoulder, which ceased in a short time, but returned whenever he attempted to resume his work. Ten days after the accident, the pain had become constant, and was so much increased in severity as to deprive him of sleep. The shoulders and surrounding parts swelled and inflamed, and, in spite of appropriate remedies, matter formed, and found its way to the surface, through several ulcerated openings. About six months after this, he applied to the hospital at Pisa. At this time a large ulcerated surface, with thickened margins, extended over the greater portion of the clavicle, and discharged a considerable quantity of unhealthy sanious matter. When a probe was introduced to the bottom of the sore, the clavicle was felt denuded, and more minute examination detected that the greater portion of this bone was in a state of necrosis. The patient was very much reduced, and in a constant state of febrile excitement. Free incisions were made over the diseased bone, and other appropriate remedies pursued; but as none of these seemed to give relief, and as the emaciation and fever were progressively increasing and wearing out the patient, it was resolved to remove the diseased clavicle by operation.

The clavicle was laid bare its whole length, when the central portion was found to be completely isolated, and was removed with the forceps. The sternal extremity being also necrosed was carefully disarticulated and removed, but, as the acromial extremity was apparently healthy it was left. The whole of the neighbouring parts were much altered in appearance from the effects of the inflammatory processes to which they were subjected. The wound was filled with charpie, and, though the process of cicatrization was slow on account of the weak state of health, yet it went on progressively—several portions of the acromial extremity of the clavicle, which had been left, came away during the suppurative process. When the cure was completed a fibro-cellular structure was found to have occupied the site of the clavicle which had been removed. The patient could move his arm in all directions, and use it for most purposes. It was, however, still somewhat weaker than the other arm, and had not yet perfectly recovered its muscularity.

Cases of Varus and Pes Equinus, successfully treated by Division of the Tendo Achillis. By M. H. Stapleton, Esq. of Dublin. (*Dublin Journal of Medical Science*, July 1839.)—1. A child, 18 months old, was affected with varus from birth, having the heel raised an inch from the ground. Various instruments had been employed for more than a year without effect. The *tendo Achillis* was divided in the manner recommended by Stromeyer. Scarcely more than a drop of blood was lost; and on examining the limb two days after the operation, the wound was found perfectly united, but with an ecchymosed effusion around it. On the tenth day after the operation the ecchymosis had entirely disappeared, and a thickening, somewhat like a provisional callus, about half an inch in length, was felt uniting and surrounding the divided extremities of the tendon. The boards of Stromeyer were then applied, and in a month from this time the foot was perfectly flat upon the ground. The use of the instrument was continued for two weeks longer, and a leathern boot, such as is generally worn by children, was then applied. A month after this the child was so perfectly well that it was impossible to tell which was the affected limb.

2. A girl, 16 years of age, had been afflicted with *pes equinus* since the age of seven years, at which time she suffered from a severe attack of small-pox. She was for a long period confined to bed with this disease, and when she recovered she could with difficulty place the heel upon the ground. Since that period the contraction progressively increased, so that at the period when she applied for assistance, the heel was raised seven inches from the ground, and covered with fine shining skin, showing it had not been in contact with the ground for years. The toes were bent upwards, and in walking the weight was thrown upon the phalangeal ends of the metatarsal bones. The leg was much wasted, the prominence of the calf being entirely lost.

On the 27th March 1839, the *tendo Achillis* was divided. The small puncture was closed, and a splint applied along the fore part of the leg and foot. Two days after this, the splint was removed, when the wound was found united by the first intention. Next day, Stromeyer's apparatus was applied, and the foot was brought to form a right angle with the tibia. On the 17th April, the foot formed a right angle with the leg : and by the 13th May, she was walking about without the slightest trace of deformity, and with the foot flat upon the ground.

In both these cases swelling of the foot was rather troublesome, but bandaging and elevating the position dissipated it.

3. A boy, 2½ years old, had been afflicted with a congenital varus of the left foot, and the torsion was so great that the weight of the body was thrown completely on the outer edge, and part of the dorsum of the foot. The plantar surface looked backwards and a little upwards. The heel was drawn upwards and inwards, and was about an inch and a half from the ground, being also very much rounded off on its external edge. A considerable angle existed between the astragalus and navicular bone. The *tendo Achillis* was divided on the 27th March, as in the preceding cases, the tendon giving way below the knife, with a crackling sound, and the upper extremity retracted strongly. Scarcely a drop of blood flowed from the punctured wound, which was closed with adhesive plaster, and the divided extremities of the tendon approximated as much as possible. The wound was perfectly healed by the 29th ; and on the 1st of April the boards of Stromeyer were applied. At the end of three weeks the foot assumed a natural appearance, but the boards were continued for a fortnight longer. The child now walks about with perfect ease and without deformity.

Sciatic Neuralgia cured by Section of the Sciatic Nerve. By M. MALAGODI. (*L'Experience*, 21 Nov. 1839.)—A young man, about 30 years of age, suffered for many years from violent sciatica, which every remedy failed to relieve. The pains became every day more and more severe, so that he at last insisted on amputation of the thigh being performed, in order to afford him relief. A more simple operation, however, fortunately succeeded. An incision of about two inches in extent was made over the course of the sciatic nerve, about four finger breadths, above the popliteal space ; the nerve was then carefully exposed and cut across. The section caused excessive pain, and the patient fainted. When he recovered, he complained of a painful creeping feeling over the whole limb. A portion of the nerve of about an inch long was then cut away, but the doing so caused no pain. The inflammatory and other symptoms which followed required the employment of general and local bleeding, the strict antiphlogistic regimen, antispasmodics, &c. The patient was able to walk by the fiftieth day after the operation, but complete cicatrization of the wound did not occur till the end of the fifth month.

Before having recourse to this operation, M. Malagodi made a number of experiments on dogs, of which the following are the results.

1. That section of the sciatic nerve at the upper portion of the inferior third of the thigh causes paralysis and consecutive atrophy of the muscles, but is not followed by gangrene.

2. That this paralysis extends from the middle of the leg to the points of the toes.

3. That the leg is still useful as a support to the body, and for the ordinary purposes of locomotion, seeing that the muscles which move it are not paralyzed, and that the knee-joint remains sound.

OBSTETRICS.

Case of Uterine Hemorrhage in which the Blood escaped through the Fallopian Tubes. By W. F. BARLOW, Esq. (*Lond. Med. Gaz.* November 11, 1839.)—A young woman, 22 years of age, who had miscarried at the sixth month, with much flooding, had an attack of *purpura hæmor-*

rhagica, from which she died five days after abortion had taken place. On dissection a quantity of blood was found to have been effused into the abdomen and pelvis, some of which was coagulated; and as clots were found projecting from the fimbriated extremities of the Fallopian tubes, from which it was evident they had been expelled, the author infers that uterine hemorrhage had taken place through these tubes into the abdomen. The uterus was less than the size it generally assumes a week after delivery, and a coagulum of blood partly occupied the neck of the organ.

Scarification of the Neck of Uterus in Dysmenorrhœa, &c. (*London Medical Gazette*, November 29, 1839.)—Mr Fenner has lately been very successful in relieving cases of dysmenorrhœa, which were accompanied by inflammatory congestion of the *cervix uteri*, by means of practising superficial scarifications on the *cervix uteri*. A cylindrical tubular speculum was used to bring the *cervix uteri* into view, when a few superficial scarifications were made, from which the blood trickled freely so long as the speculum was retained in the vagina, but ceased on its withdrawal. The operation was not attended with pain. So many as five ounces of blood may be abstracted by this means; and Mr Fenner thinks it preferable to the employment of leeches, the relief obtained being greater.

Periodical Uterine Dropsy. (*Bulletin General de Therapeutique*, May 1838.)—The patient was a married woman, 32 years of age, of lymphatic temperament, and her constitution impaired by hard work, bad food, and unhealthy residence. Every month she passed *per vaginam* from twenty-five to thirty pints of clear limpid water, of a slightly yellowish tinge, and for two days after a few drops of blood, deficient in colouring matter. After this evacuation she was perfectly well; but another collection of water soon formed, of which she was sure to be relieved the following month. This condition had continued eight months before she was seen by Dr Dubedat. She could assign no cause for the disease. It had come on without injury or sensible lesion of any kind, or alteration of their functions. The only change in her health was emaciation and general debility, which daily increased. The abdomen was of extraordinary size, and there was considerable dyspnœa; the pulsations of the heart were regular; the digestion was bad; and the bowels were constipated. The urine was scanty, but passed frequently, yet without pain; the pulse was feeble, slow, and contracted; the face was pale, as were also the tongue and gums; and there was considerable blueness around the eyes.

On examination the body of the uterus was found to be much enlarged and infiltrated, yet light compared with its size; its neck was also infiltrated and shortened.

To relieve the constipation castor oil was administered, followed by emollient enemata, and as drink barley-water with nitre.

The next day pains in the loins were felt, announcing that an evacuation of water was about to take place; and during that night water was discharged so abundantly as to inundate the bed.

Three days after the abdominal swelling was gone, the digestion had improved; her appetite returned; the pulse was more natural, and her menses had ceased.

She was put on a course of diuretics; nevertheless, in a fortnight the abdomen had enlarged, and continued to increase till again evacuated in the same manner, followed by the menstrual discharge; the quantity of water evacuated was, however, only about half what had come on the former occasion. The diuretic medicines were then given in increased doses, and afterwards followed by tonics, and under this treatment the watery discharges became less frequent, and were diminished in quantity; the menstrual discharge too returned of a more natural appearance, and in a few months she was free from complaint.

TOXICOLOGY.

Case of poisoning by Muriatic Acid. (*London Medical Gazette*, 15th November 1839.)—Frederick York, about 40 years of age, a wadding-maker, on the 17th October, purchased a quantity of muriatic acid, part at least of which he must have swallowed before returning to his employment, which he did some time after noon. About half-past two he complained to those who worked with him of being unwell, and expressed a wish to go home and lie down. He left his work and returned home, where he was seen by a female lodger, whom he told he had taken poison, and also complained greatly of the pain in his throat and stomach. In proceeding to his room, he fell and struck his head against the door-post. With the assistance of the neighbours he was lifted and placed in a chair, when he leant back and said, "I am a dead man." After this he drank a little water, but, becoming worse, his friends procured a coach, and sent him to the London Hospital, where magnesia, milk, and other remedies were administered, but without affording relief. He complained more and more of the pain in his throat and stomach, and lingered in great agony till five next morning, when death put an end to his sufferings. Shortly before his death he told his wife that he had taken muriatic acid, which was the name he gave it whenever his friends asked him what he had swallowed. The reason for his taking the acid was not ascertained.

The body was opened nine hours after death, when the following appearances were observed. The lungs adhered by old pleuritic effusions to the sides of the chest and to the diaphragm. The heart was rather larger than natural, and the left ventricle was hypertrophied. The liver was of a dark colour; the gall-bladder greatly distended with bile, and of a bright yellow colour, except at one spot, where it was in contact with the stomach, at which part it was of a green tint. The stomach was much distended, of a dark leaden hue, and its vessels filled with black blood. On removing the œsophagus and stomach and examining them, it was found that the epithelion had been removed from the mucous surface of the œsophagus, the mucous membrane itself also presenting an injured appearance. The whole internal surface of the stomach was covered with a thick coating of a yellowish colour, and beneath this the surface was stained of a black colour, having the appearance of being charred, most evident at the cardiac and pyloric orifices, and in the great *cul de sac.* In several places the whole of the coats of the stomach had been corroded excepting the peritoneal covering, and in removing the stomach from the body one of them gave way, and allowed of the escape of about six ounces of a dirty yellow fluid, which coagulated into a solid mass about ten minutes after its removal. The intestines presented the same peculiar leaden hue as the stomach, and on being slit open, the same blackening as that observed in the stomach was found extending throughout the whole length of the duodenum, but especially on the prominent parts of the *valvulæ conniventes*, the intervals being stained of a greenish yellow colour by bile. Black mottling was also observed on the internal surface of the jejunum for about a foot and a half from its commencement. The whole of the peritoneal surface of the intestines was found injected and with slight deposits of lymph.

The contents of the stomach being examined, furnished no traces whatever of muriatic acid—neither did water which was distilled from a portion of the stomach and duodenum. A few stains on the clothes, however, furnished undoubted testimony of the presence of muriatic acid, having acid reaction, and affording a precipitate with nitrate of silver, insoluble in nitric acid, but soluble in ammonia, and blackening by exposure to light. The acid stains on the black waistcoat were of a green colour.

Case of Poisoning by Gin. By W. D. Chowne, M.D. (*London Medical Gazette*, June 8th 1839.)—A boy, of about 8 years of age, obtained access to a bottle containing gin; and in about half an hour after was found lying insensible on the floor with his nose bleeding. He had apparently fallen from a chair which he had placed by the cupboard in which stood the gin-bottle. Very shortly after this he vomited some fluid matters which his father said smelled of gin. His father thought he must have taken nearly half a pint of gin.

Seven hours after the spirit had been swallowed, he was taken to the Charing-Cross Hospital, where the stomach-pump was applied, but the fluids ejected had no odour of gin; the breath too was free of any spirituous odour. He was insensible and motionless, the limbs relaxed and powerless, the face pale, the surface of the body pale, and below the ordinary temperature. The pulse was 144, very small and feeble; the pupils were contracted, and did not dilate on exclusion of the light; the breathing was slow, difficult, and stertorous; and there were involuntary attempts at vomiting, but the fluid ejected had no peculiar odour.

Fifteen hours after the gin was swallowed, he passed urine and fæces, but without consciousness. The pulse and breathing were as before; only mucous rattle was heard in the chest. The countenance continued free from expression of anxiety or uneasiness.

Twenty-eight hours after taking the spirit he occasionally opened his eyes, but evidently without consciousness. The face and general surface were still pale and cold. The stertor of the breathing had rather diminished, but the mucous rattle increased. The limbs were relaxed, and the pulse was small and rapid.

Fifty-two hours and a half after the accident, he looked about him with seeming intelligence, but did not reply when spoken to. The stertor was less, but the mucous rattle had increased, being loud, and heard over the whole chest. The cheeks were flushed, and the skin hot and dry. The limbs were still relaxed and powerless, and he made no effort to move; and the pulse varied from 160 to 180. He passed his fæces and urine involuntarily.

A few hours before his death his lips became livid, and though the cerebral symptoms diminished, those of the chest increased in severity. He died sixty-seven hours and a half after having swallowed the spirits. Throughout the whole of this period, there was neither delirium, convulsions, injection of conjunctiva, peevishness, nor anxiety of countenance.

Post mortem appearances.—The surface of the body was natural and without discoloration, or any appearance of external injury. The expression of the countenance was placid.

On removing the scalp no unusual redness was discovered on its internal surface, nor on the pericranium. The *dura mater* was rather more tense than usual; the arteries more visible, and the blood within them more florid. There were no morbid adhesions nor effusion of fluid between the arachnoid and the *dura mater*. The veins of the *pia mater* were distended with dark blood, especially over the temporal region. A very small quantity of serous fluid tinged with blood escaped from the base of the brain. The brain itself appeared to be healthy. There was no odour of gin in any part of the brain.

No pleuritic effusion was found in the chest. The lungs anteriorly appeared natural in colour, but posteriorly they were of a dark colour from the congestion of blood. The trachea and bronchial tubes were full of a frothy turbid fluid; their lining membranes appearing to be natural. No other unusual appearance was met with in the chest. The abdominal viscera appeared to be healthy. The surfaces of all the organs of the body, however, presented one remarkable feature, viz. a tendency to dryness. Thus the brain, lungs, heart, and intestines became so dry immediately on exposure to the air, that they did not communicate the slightest moisture to the fingers.

Case of Poisoning by Cheese. (*Schmidt's Jahrbucher, t.* 21, 1839.)—A father, with his two children, their servant, and two other young persons, partook of about two ounces and a half of a particular kind of cheese, called in the country *knapost.* (It is made of curdled milk, which is allowed to stand till worms are developed in it.) At the end of about two hours these six individuals were seized with the most alarming symptoms; sickness, tremors, sensation of burning in the throat and stomach, vomiting, purging, blue coloration of the skin, coldness of the surface, cramps, and faintings. Emetics of ipecacuan, with infusion of chamomile, were administered, followed afterwards by antispasmodics, and spirituous frictions over the epigastrium. The symptoms abated in from six to ten hours in the various individuals; but weakness remained for several days.

Chemical analysis failed to discover any trace of either mineral or vegetable poison. A concentrated decoction of the cheese, however, had an excessively acrid sour taste, which left a sensation of burning on the tongue.

The cows which furnished the milk for the preparation of these cheeses pastured in a meadow rich in alliaceous plants (probably the *Allium scorodoprasum,*) and the natives of the district say that they are very subject to diarrhœas and hematurias.

STATISTICS.

Vaccination. (*Archives Generales,* December 1839.)—At a late meeting of the French Royal Academy of Medicine, M. Devillers delivered his annual report on vaccination for the year 1838. By this it appeared that out of 797,782 births, no fewer than 495,450 of the children had been vaccinated; and he remarked, that it was worthy of notice, that where vaccination had been carefully attended to, epidemic small-pox had almost completely disappeared; and that, if it does attack individuals who have been formerly vaccinated, it is generally mild, and easily yields to appropriate treatment. He was not, however, able to give any decided opinion as to the advantage of re-vaccination.

Mortality from Phthisis at Naples. (*Gazette Medicale,* December 20, 1839.) In a late number of the Filiatre Sebizio, M. de Renzi controverts the conclusions concerning the mortality by phthisis at Naples, to be found in a paper presented by M. Journé to the Academy of Medicine at Paris. The sum total of phthisical patients received into the Hospital of Incurables during the years 1835-36 and 37, is reduced by M. de Renzi from 2969 to 2775; and he shows that of this number only 1846 belonged to Naples and its suburbs, the rest consisting of strangers who come to die there. This gives an average of 615 instead of 989, which was M. Journé's supposition—a considerable difference, particularly if the probabilities of medicine are to be based on figures. Then subtracting the catarrhal affections, or those which resemble phthisis, M. de Renzi fixes the number of phthisical patients at 600, which, in a population of 400,000, gives one in 666. We must add, however, 200 patients belonging to the middle and upper classes, which will make 800; and of these 560 die, or 70 per cent. But, as the ordinary mortality is 13,000, the proportion of deaths from phthisis is about 1 in 23.

The mean mortality at the Hospital of Incurables is 1800, and the number of deaths among the phthisical patients belonging to the town is 430; so that these deaths form a quarter of the total mortality in the institution. But, if we consider, *first,* that at Paris, more than a third of all patients are treated in the hospitals, and hardly a fifth at Naples; *secondly,* that at

Paris, the number of consumptive patients received is equal to those suffering under other diseases, while at Naples the latter are much fewer in proportion, it will be allowed that a comparison is difficult. This being settled, if in the hospitals of Paris, as Bayle has demonstrated, and M. Journé laid down, one-third of the patients die of phthisis, and this number is more than a third of all the deaths in the whole town; if, on the other hand, in the hospitals at Naples, less than a quarter of the patients die by phthisis, and if, even adding the patients who do not belong to the town, we do not reach a third, as at Paris; if the phthisical patients in the hospital include nearly all in the town, whilst the deaths in the hospital are but a sixth of the general mortality, it necessarily follows that the patients who die of phthisis are in proportion to those who die of other diseases, as 1 to 4 at Paris, and 1 to 12 at Naples. Hence the climate of Naples, far from favouring the development of the disease, makes it rarer than it would naturally be in a town of small size relatively to its population, who are in consequence crowded. If we consider, moreover, that scrofulous affections are very common there, we must necessarily conclude, that the number of consumptive patients does not exceed the natural proportion to those afflicted with scrofula.

As to the important question whether a phthisical patient from a cold or northern climate may experience benefit in a more temperate one, M. de Renzi answers it in the affirmative, and says he knows it from his own experience. But if the disease has already made great progress, if the disorganization of the lungs is much advanced, and the tubercles have begun to soften, a southern climate is of no avail. In such cases the poor patient travels but to perish on a foreign shore, far from his relatives and friends.

Mortality in the Prussian Army for the year 1838. (*L'Experience*, 25th December 1839.) During the year 1838, 142,234 patients have passed through the Prussian army hospitals, of which number 4,992 were remaining over from the month of December 1837. The number of patients admitted each month of the year, arranged according to the relative proportion of admissions gives the following result: In the month of January, 14,086 patients were admitted; May, 13,742; June, 12,683; March, 12,281; February, 12,278; August, 11,263; July, 11,100; April, 10,811; December, 10,273; September, 10,216; November, 9,989; October, 8,450; the total amount of admissions for the year 1838 being 137,242.

Of the total number, 142,234, there were 135,925 dismissed cured; and 1333 died; 429 were incurable, and no mention is made of 8. At the end of the year 1838, there remained in the hospitals 4,539 patients. In the tables detailing the causes of death, it is shown that 456 died from nervous fevers; 351 from phthisis; 171 from inflammatory fevers; 82 from dropsy; 32 from delirium tremens; 41 from old age; 19 from apoplexy, &c. These tables also show that there were the astonishing number of 67 deaths from suicide, of which 48 were by fire arms, 13 by hanging, 4 by drowning, and 2 by cutting the throat.

Tables showing the Temperature of Cove, for the year 1838, *and contrasting it with Torq Exeter, Cheltenham, Bristol, London, Liverpool, Dumfries, Cork, &c., during the severe mo of January and February, and such other months throughout the same year in which Obser tions have been recorded.* By David H. Scott, M. D., &c. &c.—The Observations have b made with the self-registering thermometers, prepared by Newman, London, and the tem rature at 9 A. M., as well as the range of 24 hours noted.

DAILY TEMPERATURE.

	Maximum Temperature.				Minimum Temperature.					Maximum Temperature.				Minimum Temperature.			
	Cove.	Torquay.	Exeter.	Cheltenham	Cove.	Torquay.	Exeter.	Cheltenham		Cove.	Torquay.	Exeter.	Cheltenham	Cove.	Torquay.	Exeter.	Cheltenham
Jan. 1	48	52	49	—	38	44	41	—	Feb. 1	47	38	36	34	42	34	32	32
2	52	51	48	—	40	37	33	—	2	43	35	34	33	39	32	30	30
3	49	49	47	—	40	40	37	—	3	43	34	31	35	39	30	28	29
4	50	50	46	—	37	37	34	—	4	42	34	32	32	36	28	25	27
5	50	47	43	—	38	33	28	—	5	43	35	32	32	35	30	25	24
6	49	45	42	—	39	40	36	—	6	44	37	34	34	35	33	28	28
7	47	43	40	—	37	37	32	—	7	48	46	43	38	37	35	30	28
8	46	38	38	35	37	30	27	27	8	49	47	45	44	44	45	42	38
9	38	34	32	30	35	26	20	24	9	44	48	45	47	39	43	40	38
10	35	33	27	28	32	24	22	24	10	40	46	43	42	32	32	31	31
11	40	35	32	30	27	23	22	24	11	40	34	32	33	30	24	23	27
12	47	36	32	31	35	26	22	25	12	37	36	33	34	30	24	19	26
13	44	35	31	29	36	27	21	21	13	39	36	34	35	33	30	23	23
14	43	32	32	—	36	26	19	—	14	39	38	33	32	33	32	22	23
15	43	36	29	25	37	29	22	16	15	39	37	36	33	31	34	30	24
16	41	36	32	25	32	30	26	17	16	43	43	34	30	35	33	28	26
17	33	35	33	29	30	21	19	21	17	44	46	38	32	36	35	31	26
18	33	33	33	31	30	26	24	25	18	47	44	43	33	33	34	30	24
19	32	29	26	26	25	22	17	15	19	46	44	43	30	35	36	32	26
20	44	36	24	22	35	25	17	13	20	46	47	43	36	40	38	32	27
21	47	45	37	23	37	35	32	12	21	45	49	43	37	40	41	40	30
22	49	48	45	39	42	44	39	23	22	47	46	48	35	40	37	34	32
23	47	47	45	42	46	42	39	34	23	50	46	41	35	41	38	32	32
24	40	37	33	36	37	32	29	28	24	49	50	46	38	43	43	41	34
25	35	33	32	28	30	26	22	24	25	48	49	50	44	43	43	42	38
26	41	37	29	28	30	30	25	25	26	48	47	47	47	42	41	40	37
27	45	35	32	30	35	30	26	27	27	47	49	46	40	38	39	36	34
28	44	43	34	30	36	35	28	27	28	46	49	48	40	38	43	40	35
29	49	50	41	38	39	42	33	29									
30	47	47	46	43	39	41	35	35									
31	46	40	40	37	42	36	33	33									

Mean Temperature of each Month.

	Cove.	Torquay.*	Cork.†	Exeter.	London.‡	Bristol.§	Cheltenham.	Liverpool.‖
January,	39.7	36.1	37.1	32.2	30.7	29.9	—	31.2
February,	40.7	38.8	—	35.6	34.8	34.5	32.9	34.1
March, .	45.2	44.9	44.2	—	43.6	—	—	41.2
April, .	47.5	—	46.5	—	45.0	—	—	44.1
May, .	53.8	—	52.7	—	53.5	—	—	52.1
June, .	58.5	—	61.1	—	61.1	—	—	58.2
July, .	60.5	—	61.5	—	63.4	—	—	61.2
August,	61.3	—	62.1	—	62.7	—	—	60.1
September,	58.3	—	58.2	—	57.0	—	—	56.1
October,	52.8	—	51.4	—	50.8	—	—	50.0
November,	45.4	—	43.4	—	42.8	42.5	—	40.2
December,	45.1	—	43.1	—	40.5	41.7	—	41.0

* Dr De Barry. † Royal Cork Institution. ‡ Royal Society.
§ Bristol Institution. ‖ Mr Abraham.

Mean Temperature of each Month, at 9 A. M.

	Cove.	Torquay.	Exeter.	Rochfort near* Belfast.	Bristol	Dumfries-sh.†	Greenock.‡	London.
January,	38.8	35.8	31.0	—	32.0	—	33.2	30.1
February,	40.1	38.6	34.8	36.	34.5	—	31.5	33.8
March, .	43.9	—	—	39.2	42.5	36.3	41.3	42.7
April, .	49.4	—	—	44.0	47.0	40.3	46.7	44.7
May, .	55.0	—	—	50.9	55.0	55.1	54.2	53.4
June, .	60.1	—	—	58.9	61.5	56.0	60.5	60.5
July, .	60.5	—	—	61.3	65.5	58.3	62.5	63.3
August,	60.9	—	—	60.9	62.0	56.1	60.7	62.8
September,	58.4	—	—	56.4	56.9	53.0	56.2	55.9
October,	53.0	—	—	48.0	52.5	47.0	48.6	51.5
November,	45.9	—	—	42.5	42.5	36.9	41.0	41.9
December,	46.4	—	—	40.8	42.0	38.0	42.4	39.6

* Private Journal. † Philosophical Magazine. ‡ Dr Spiers.

Mean of the Maximum or Day Temp.

	Cove.	Torquay.	Exeter.	London.	Bristol.
January,	43.6	40.2	36.7	34.4	34.5
February,	44.4	42.4	39.7	38.4	39.5
March, .	50.9	50.1	—	49.2	—
April, .	54.4	—	—	50.9	—
May, .	62.3	—	—	61.3	—
June, .	65.7	—	—	68.6	—
July, .	67.4	—	—	70.8	—
August,	68.1	—	—	69.0	—
September,	64.9	—	—	62.6	—
October,	58.5	—	—	54.7	—
November,	50.6	—	—	46.8	45.0
December,	49.7	—	—	43.5	44.5

Mean of the Min. or Night Temp.

	Cove.	Torquay.	Exeter.	London.	Bristol.
Jan.	35.8	32.0	27.7	27.1	25.4
Feb.	37.2	35.2	31.6	31.2	29.6
March,	39.6	39.6	—	38.1	—
April,	40.7	—	—	39.2	—
May,	45.4	—	—	45.8	—
June,	51.4	—	—	53.6	—
July,	53.6	—	—	56.0	—
Aug.	54.5	—	—	56.4	—
Sept.	51.7	—	—	51.5	—
Oct.	47.1	—	—	47.0	—
Nov.	40.0	—	—	38.9	40.0
Dec.	40.4	—	—	37.5	38.0

Absolute Highest Temperature of each Month.

	Cove.	Torquay.	Cork.	Exeter.	London.	Liver-pool.
January,	52	52	52	49	50	47
February,	50	50	—	50	48	49
March, .	58	56	58	—	58	54
April, .	66	—	64	—	64	59
May, .	75	—	73	—	73	67
June, .	70	—	78	—	79	70
July, .	74	—	77	—	78	74
August,	75	—	80	—	76	72
September,	69	—	72	—	69	68
October,	64	—	66	—	63	61
November,	59	—	56	—	57	51
December,	55	—	53	—	55	55

Absolute Lowest Temperature of each Month.

	Cove.	Torquay.	Cork.	Exeter.	London.	Liver-pool.
January,	25	21	21	17	11	11
February,	30	24	—	19	24	21
March, .	33	30	30	—	31	31
April, .	32	—	27	—	29	32
May, .	38	—	32	—	36	35
June, .	45	—	43	—	44	44
July, .	49	—	46	—	49	50
August,	50	—	46	—	49	48
September,	43	—	38	—	42	43
October,	38	—	34	—	32	35
November,	34	—	29	—	30	29
December,	35	—	29	—	29	28

Daily and Monthly Ranges of Temperature.

	Successive daily range.			Monthly range.		
	Jan.	Feb.	Mar.	Jan.	Feb.	Mar.
Cove,	2.7	1.7	2.3	26	20	25
Torquay,	3.3	2.6	2.4	31	26	26

Number of nights the Thermometer fell to and below the freezing point.

	Jan.	Feb.	Mar.
Cove,	8	4	—
Torquay,	17	9	1
Exeter,	21	19	—
London,	23	20	1
Cork,	17	Not registered.	4

Superiority of Temperature deduced from the preceding tables.

			Jan.	Feb.	Mar.
Cove warmer than	Torquay, . .	by	3.6	1.9	0.3
	Exeter, . . .		7.5	5.1	
	Bristol, . . .		9.8	6.2	
	London, . . .		9.0	5.9	1.6
	Liverpool, . .		8.5	6.6	4.0
	Cheltenham, . .			7.8	
	Rockport, near Belfast,	At 9 A.M.		6.5	4.7
	Dumfries-shire, .				7.6
	Greenock, .		5.6	8.6	2.6
	Torquay, . .		3.0	1.5	

It appears desirable to give at one view the Temperature of Madeira, and of those places on the Continent to which invalids resort, in comparison with those nearer home, remarking that, with the exception of Cove, Penzance, and Torquay, the observations were made previous to 1825.

	Madeira.*	Rome.*	Naples.*	Nice.*	Cove.†	Pau.*	Penzance.‡	Florence.*	Bordeaux.*	Torquay.§	Sienna.*	Sidmouth.*	Geneva.*
Jan.	59.5	47.6	46.5	45.8	43.5	38.8	42.5	41.0	41.0	40.3	39.7	36.3	32.0
Feb.	58.5	49.4	48.5	49.0	44.4	44.9	43.5	45.0	—	43.4	40.2	42.0	35.5
Mar.	61.0	52.0	52.0	51.4	45.4	46.8	46.4	48.0	—	45.6	46.2	45.0	41.5

* Appendix to Sir James Clarke's Work on Climate.

† Dublin Journal of Medical Science, No. xxxvii. Article "Medical Topography of Cove."

‡ Dr Forbes in Transactions of Provincial Medical and Surgical Association.

§ Dr De Barry's Tables.

It will be interesting to compare the amount of Watery Vapour entering into the atmosphere of Madeira and of Cove, as hitherto no opportunity offered of doing so.

		Winter.	Spring.	Summer.	Autumn.
Main Dew Point, .	*Madeira, at 10 A.M.	54.1	55.0	66.6	67.0
	†Cove, at 9 A.M.	40.2	41.3	54.5	47.8
Grains of vapour in a cubic foot of the atmosphere.	Madeira, . .	5.11	5.23	7.49	7.60
	Cove, . .	2.98	3.06	4.70	3.78

* Dr Heineken's Observations. † Medical Topography of Cove.

Dr De Barry's published Tables on Torquay, not having extended beyond March, it is to be regretted that a more intimate comparison cannot be instituted between the South of Ireland and of England.

1. Tables illustrating First Report, on the Sickness, Mortality, and Invaliding among the Troops in the United Kingdom.

No. 1, p. 455.

Showing the attacks of Sickness among the Workmen in the Government Dock-Yards.

Station.	Period of Observations.	Aver. No. employed Annually.	Aver. No. attacked by Sickness Annually.	Ratio per 1000 of Str. attacked Annually.
Portsmouth,	1830 to 1832	1980	750	378.
Plymouth,	1829 to 1831	2062	715	347.
Sheerness,	1830 to 1832	474	207	437.
Chatham,	1830 to 1832	1314	646	492.
Pembroke,	1830 to 1832	446	234	524.
	Total,	6276	2552	Average 407.

No. 2, p. 460.

Showing the Annual Ratio of Mortality in the Depots of Corps Serving in the West Indies.

Period.	Mean strength.	Deaths.	Ratio of deaths per 1000 of strength.
1st Jan. to 31st Dec. 1830, -	2551	35	14.
1831, -	2952	47	16.
1832, -	3511	73	21.
1st Jan. 1833 to 31st Mar. 1834,	4794	98	20.
1st April 1834 „ 1835,	3346	50	15.
„ 1835 „ 1836,	3462	70	20.
„ 1836 „ 1837,	2921	63	21.
Total, -	23537	436	—
Average, -	3246	60	18.5

No. 3, p. 460.

Showing the principal fatal Diseases among the Depots of Corps serving in the West Indies.

	Total deaths by each class of diseases.	Aver. annual ratio of deaths per 1000 of mean strength.
By fevers, - - - - -	68	2.8
eruptive fevers, - - -	5	.2
diseases of the lungs, - -	226	9.6
liver, - - -	2	.1
stomach and bowels, -	9	.4
epidemic cholera, - - -	27	1.2
diseases of the brain, - -	14	.6
dropsies, - - - - -	9	.4
other diseases, - - -	32	1.3
suicide and accidents, - -	21	.9
causes unknown, - - -	23	1.
Total, -	436	18.5

No. 4.

Table of the Mortality by Cholera.

Age.	Aggreg. strength of Cavalry and Household Troops during the three years cholera prevailed.	Deaths by cholera in that force during these three years.	Annual rate of mortality by cholera at each age.
Under 18 -	548	0	0
18 to 25 -	14103	32	2.3
25 to 33 -	13336	33	2.5
33 to 40 -	7223	29	4.
40 to 50 and upwards,	2229	11	4.9
	37439	105	2.8

No. 5, p. 465, 466.

Showing the influence of the Seasons in producing Sickness and Mortality among the Dragoon Guards and Dragoons in the United Kingdom.

	Total admissions.				Total deaths.			
	By acute diseases.	By chronic diseases.	By surgical diseases.	Total by all diseases.	By acute diseases.	By chronic diseases.	By surgical diseases.	Total by all diseases.
In 7 Januarys,	1287	271	1619	3177	18	17	2	37
7 Februarys,	1161	310	1527	2998	13	14	4	31
7 Marches,	1085	303	1634	3022	21	18	3	42
7 Aprils,	1170	280	1610	3060	19	26	5	50
7 Mays,	1336	328	1866	3530	31	26	6	63
7 Junes,	1274	322	1824	3420	21	15	—	36
7 Julys,	1333	350	1893	3576	24	12	4	40
7 Augusts,	1628	335	1877	3840	29	13	6	48
7 Septembers	1411	293	1740	3444	26	8	4	38
7 Octobers,	1231	323	1729	3283	22	13	2	37
7 Novembers	1071	266	1588	2925	20	16	3	39
7 Decembers,	1215	298	1673	3186	20	15	3	38
Total,	15202	3679	20580	39461	264	193	42	499

No. 6, p. 466.

Showing the influence of the Seasons in producing Mortality in the French Army.

	Deaths.	Millesimal ratio of deaths.
January, -	1402	82
February, -	1334	78
March, -	1432	84
April, -	1475	86
May, -	1450	85
June, -	1257	73
July, -	1279	75
August, -	1607	94
September, -	1577	92
October, -	1638	96
November, -	1381	81
December, -	1260	74
Total,	17092	1000

II. Tables illustrating Second Report, on the Sickness, Mortality, and Invaliding among the Troops in the Mediterranean.

No. 7.

Showing the principal Diseases among the White Troops serving in Gibraltar.

	Admissions.		Deaths.	
	Total among whole force in 19 years.	Annual ratio per 1000 of mean strength.	Total among whole force in 19 years.	Annual ratio per 1000 of mean strength.
By fevers, ...	9687	161	563	9.3
eruptive fevers, ...	54	1	1	—
diseases of the lungs, ...	8487	141	318	5.3
liver, ...	759	13	22	.4
stomach and bowels,	11202	186	128	2.1
epidemic cholera, ...	459	7	131	2.2
diseases of the brain, ...	371	6	32	.5
dropsies, ...	72	1	16	.3
rheumatic affections, ...	2309	38	8	1.3
venereal affections, ...	3450	57	1	
abscesses and ulcers, ...	6131	102	9	
wounds and injuries, ...	5372	89	24	
punished, ...	938	16	—	
diseases of the eyes, ...	5862	97	—	
,, skin, ...	903	15	—	
all other diseases, ...	2171	36	38	
Total,	58227	966	1291	21.3

No. 8.

Fevers.—Under this head are conjoined in the preceding Table,—

	Admitted.	Died.	Proportion of deaths to admissions.
Quotidian intermittent fever, ...	174	5	1 in 35
Tertian, ...	124	—	0 ,, 124
Remittent fever, ...	314	28	1 ,, 11
Common continued fever, ...	7002	83	1 ,, 84
Synochus, ...	517	13	1 ,, 40
Typhus, ...	30	10	1 ,, 3
Yellow fever (not epidemic), ...	4	1	1 ,, 4
Total, ...	8165	140	1 in 58
Epidemic yellow fever, ...	1522	423	2 ,, 3⅗
Total, ...	9587	563	1 in 17¼
Annual ratio per 1000 of mean strength, exclusive of epidemic fever,	136	2.3	—
Annual ratio per 1000 of mean strength, inclusive of epidemic fever,	161	9.3	—

No. 9.

Diseases of the Lungs.

	Admitted.	Died.	Proportion of deaths to admissions.
Inflammation of lungs, -	2515	56	1 in 45
Pleurisy, - -	28	—	0 ,, 28
Spitting of blood, -	189	4	1 ,, 47
Consumption, -	394	215	1 ,, 2
Acute catarrh, - -	4527	16	1 ,, 283
Chronic catarrh, -	659	23	1 ,, 29
Asthma, - -	42	2	1 ,, 21
Difficulty of breathing,	133	2	1 ,, 67
Total, -	8487	318	1 in 27
Annual ratio per 1000 of mean strength,	141	5.3	—

No. 10.

Diseases of the Liver.—Under this head are comprised in the following table:

	Admitted.	Died.	Proportion of deaths to admissions.
Acute inflammation of liver,	331	7	1 in 47
Chronic ,, - -	257	11	1 ,, 23
Jaundice, - -	171	4	1 ,, 43
Total, -	759	22	1 in 34
Annual ratio per 1000 of mean strength,	13	$\frac{4}{16}$	—

No. 11.

Diseases of the Stomach and Bowels.—Under this head are comprised in the preceding table:

	Admitted.	Died.	Proportion of deaths to admissions.
Abdominal inflammation,	13	5	1 in $2\frac{1}{2}$
Inflammation of stomach,	20	5	1 ,, 4
,, of bowels, -	45	12	1 ,, 4
Vomiting of blood, -	7	1	1 ,, 7
Acute dysentery, -	2594	49	1 ,, 53
Chronic ,, - -	59	15	1 ,, 4
Indigestion, - -	304	1	1 ,, 304
Colic, - -	993	2	1 ,, 496
Cholera, - -	1230	7	1 ,, 176
Diarrhœa, - -	5600	31	1 ,, 181
Constipation, -	337	—	0 ,, 337
Total, -	11202	128	1 in 89
Annual ratio per 1000 of mean strength,	186	2.1	—

No. 12.
Diseases of the Brain.

	Admitted.	Died.	Proportion of deaths to admissions.
Inflammation of brain, -	12	3	1 in 4
Headach, - -	27	—	0 ,, 27
Stroke of the sun, -	3	1	1 ,, 3
Apoplexy, - -	36	14	1 ,, 2½
Palsy, - -	53	4	1 ,, 13
Epilepsy, - -	110	1	1 ,, 110
Fatuity, - -	47	2	1 ,, 23
Madness, - -	38	1	1 ,, 38
Water in the head, -	1	1	1 ,, 1
Brain-fever of drunkards,	44	5	1 ,, 9
Total, -	371	32	1 in 11⅔
Annual ratio per 1000 of mean strength,	6	$\frac{5}{10}$	—

No. 13.
Dropsies.—Under this head are comprised

	Admitted.	Died.	Proportion of deaths to admissions.
Subcutaneous dropsy, -	24	6	1 in 4
Abdominal dropsy, -	44	7	1 ,, 6
Water in the chest, -	4	3	1 ,, 1⅓
Total, -	72	16	1 in 3
Annual ratio per 1000 of mean strength,	1.	$\frac{3}{10}$	—

No. 14.
Comparison of the relative influence of other classes of Diseases among troops in the United Kingdom and Gibraltar.

	Admissions per 1000 of the Force annually. Of Dragoon Guards and Dragoons in United Kingdom.	Of Troops in Gibraltar.
From rheumatic affections, -	50	38
venereal ,, - -	181	57
ulcers and abscesses, -	133	101
wounds and injuries, -	126	89
diseases of the eyes, -	19	97
,, skin, -	29	15
punished, - -	8	16

No. 15.
Showing the Mortality in Fatal Diseases among the Black Troops in Gibraltar.

	Admitted.	Died.
Fevers, - -	62	—
Diseases of the lungs, -	518	67
,, liver, -	1	1
,, stomach and bowels,	151	20

	Admitted.	Died.
Diseases of the brain,	6	1
Dropsies,	5	3
Rheumatic affections,	143	—
Venereal ,,	7	—
Abscesses and ulcers,	88	3
Wounds and injuries,	62	—
Punished,	47	—
Diseases of the eyes,	7	—
Other diseases,	4	—
Total per Medical Returns	1100	95
Causes unknown, supposed to have been principally affections of the lungs and bowels,	—	24
Total per War-Office Returns,	—	119

No. 16.

Showing the principal Diseases among the Troops in Malta.

	Admissions.		Deaths.	
	Total among whole force in 20 years	Annual ratio per 1000 of mean strength.	Total among whole force in 20 years.	Annual ratio per 1000 of mean strength.
By fevers,	7078	173	118	2.9
eruptive fevers,	34	1	3	.1
diseases of lungs,	4883	120	245	6.0
,, liver,	857	21	47	1.1
,, stomach and bowels,	6317	155	147	3.6
,, brain,	236	6	30	.8
dropsies,	70	2	16	.4
rheumatic affections,	1383	34	9	1.4
venereal ,,	7336	180	2	
abscesses and ulcers,	6013	147	7	
wounds and injuries,	4105	100	23	
punished,	1628	40	—	
diseases of the eyes,	4162	102	—	
,, skin,	858	21	—	
all other diseases,	1679	40	18	
Total,	46639	1142	665	16.3

No. 17.

Fevers.—Under this head are comprised

	Admitted.	Died.	Proportion of deaths to admissions.
Quotidian intermittent,	232	1	1 in 232
Tertian,	79	—	0 ,, 79
Remittent,	384	16	1 ,, 24
Common continued,	6255	94	1 ,, 67
Synochus,	125	5	1 ,, 25
Typhus,	3	2	2 ,, 3
Total,	7078	118	1 in 60
Ratio per 1000 of mean strength,	173	2.9	—

No. 18.—Diseases of the Lungs.

	Admitted.	Died.	Proportion of deaths to admissions.
Inflammation of lungs, -	1370	44	1 in 31
Pleurisy, - -	21	—	0 ,, 21
Spitting of blood, -	106	8	1 ,, 13
Consumption, -	235	144	10 ,, 16
Acute catarrh, -	2616	18	1 ,, 145
Chronic ,, - -	425	26	1 ,, 16
Asthma, - -	40	1	1 ,, 40
Difficulty of breathing, -	70	4	1 ,, 17
Total, -	4883	245	1 in 20
An. ratio per 1000 of mean strength,	120	6	—

No. 19.—Showing that the Deaths from Diseases of the Lungs among the population of all ages in 13 years (1822—1834) has been as follows:

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Inflam. of lungs,	75	58	73	73	55	29	10	19	25	27	31	48	523
Pleurisy, .	15	7	11	7	12	3	7	6	3	4	6	11	92
Spitting of blood,	13	10	20	7	4	13	4	8	7	10	13	9	118
Phthisis pulmon.	115	94	115	122	147	91	110	110	103	129	105	122	1363
Consumption,	238	177	205	179	202	223	294	249	258	301	233	227	2786
Catarrh, .	110	118	128	102	71	66	60	64	53	70	83	131	1056
Asthma, .	80	73	74	53	46	31	38	30	19	34	43	66	587
Hooping cough,	30	23	18	14	16	11	8	3	7	2	2	5	139
Total,	676	560	644	557	553	467	531	489	475	577	516	619	6664

No. 20.—Diseases of the Liver.

	Admitted.	Died.	Proportion of deaths to admissions.
Acute inflammation of the liver,	411	19	1 in 22
Chronic ,, ,, -	188	23	1 ,, 9
Jaundice, - -	248	5	1 ,, 49
Total, -	857	47	1 in 18
Ratio per 1000 of mean strength,	—— 21	—— 1.1	—— —

No. 21.—Diseases of the Stomach and Bowels.

	Admitted.	Died.	Proportion of deaths to admissions.
Abdominal inflammation, -	21	4	1 in 7
Inflammation of stomach, -	10	1	1 ,, 10
,, bowels, -	68	7	1 ,, 10
Vomiting of blood, - -	9	2	1 ,, 4½
Acute dysentery, - -	1303	78	1 ,, 17
Chronic ,, - -	98	16	1 ,, 6
Indigestion, - -	164	1	1 ,, 164
Colic, - -	508	2	1 ,, 254
Constipation, - -	659	1	1 ,, 659
Cholera, - - -	454	5	1 ,, 91
Diarrhœa, - -	3023	30	1 ,, 101
Total, -	6317	147	1 in 43
Ratio per 1000 of mean strength,	155	3.6	—

No. 22.

Abdominal inflammation,	15
Inflammation of stomach,	47
,, bowels,	294
Vomiting of blood,	12
Indigestion,	18
Colic,	143
Dysentery,	1478
Diarrhœa,	2901
Cholera,	12
	12) 4920
Annually,	380

No. 23.

Diseases of the Brain.

	Admitted.	Died.	Proportion of deaths to admissions.
Inflammation of the brain,	9	1	1 in 9
Headach,	16	—	0 ,, 16
Apoplexy,	28	15	1 ,, 2
Palsy,	29	2	1 ,, 14
Catalepsy,	1	—	0 ,, 1
Brain-fever of drunkards,	38	5	1 ,, 8
Fatuity,	15	2	1 ,, 7
Madness,	30	2	1 ,, 15
Water in the head,	1	1	1 ,, 1
Epilepsy,	69	2	1 ,, 35
Total,	236	30	—
An. ratio per 1000 of mean strength,	6	$\frac{8}{10}$	1 in 8

Harveian Society. Notice to Students of Medicine.—The Harveian Society of Edinburgh have fixed on the following subject for their Prize Essay for the year 1841, viz.:—" *An Experimental Inquiry into the Phyisological and Therapeutical Properties of Colchicum Autumnale.*"

Dissertations on this subject must be transmitted to one of the Secretaries, on or before the 1st day of January 1841. Each Dissertation must be accompanied by a Sealed Letter, containing the Name and Address of the Author, and inscribed on the back with a motto. The same Motto must also be prefixed to the Dissertation to which the Letter belongs. None of the Sealed Letters are ever opened, except that bearing the same Motto with the successful Essay.

The Prize given by the Society, to the successful Candidate, is an elegant Silver Medal, with a suitable Inscription.

The Candidate is at liberty to employ his Essay afterwards in any way he may think proper: And, accordingly, some Dissertations submitted to the Harveian Society, have, in consequence of publication, conferred no small reputation on the Authors.

No Candidate, who has already gained the Society's Prize, is allowed to compete a second time.

By order of the Society,

Richard Huie, M. D., 8, George Square,
P. D. Handyside, M. D., 10, Shandwick Place, } *Secretaries.*

Edinburgh, *March* 14, 1840.

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END OF VOLUME FIFTY-THIRD.

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REMARKS
ON SOME PASSAGES IN THE REVIEW
OF
"*Principles of General and Comparative Physiology*,"
IN THE
EDINBURGH MEDICAL & SURGICAL JOURNAL,
JANUARY, 1840.

BY WILLIAM B. CARPENTER, M.D., M.R.C.S., &c.

IT is with much pain that I feel compelled to request the attention of the readers of the *Edinburgh Medical and Surgical Journal* to the following remarks. My object in putting them forth to the world is solely to defend myself from injurious imputations. I have no underhand purpose to serve. I write more in sorrow than in anger. But the mode in which I have been attacked leaves me, in the opinion of my friends as well as in my own, no choice but to reply.

When I sent forth my volume into the world, it was with the confident expectation that, whatever reception it might experience, it would be judged of by its merits alone. Few persons were less disposed to over-estimate these than myself. I was well aware of its many imperfections. I prepared myself, therefore, to expect unfavourable criticism; and I determined to allow no feeling of pride, or of vexation at the mode in which the correction might be administered, to interfere with my profiting by it. Until the publication of the last number of the *Edinburgh Medical and Surgical Journal*, however, I have had little occasion for such an exercise of self-control. The general opinions expressed of my work, both by the public press, and by individuals well qualified to estimate it, have been far more favourable than I had dared to anticipate; and I have had the unexpected gratification of receiving the highest approbation from quarters in which no personal regard could have exerted any influence.

Had the review, on which I now feel called on to remark, been executed with *good faith*, I should have remained silent, however depreciating its tone might have been. But I have been held up to public reprobation for entertaining opinions *against* which I have most positively expressed myself; and I have been condemned, on this false ground, as altogether unfit for the duties of a Public Instructor—a post of which it is my highest ambition to be deemed worthy. Such statements, from an authority so respectable as the *Edinburgh Medical and Surgical Journal*, must, if I allow them to remain unrefuted, exert a prejudicial influence over the whole of my subsequent career; and the reply which I therefore feel it necessary to make, is not dictated by animosity towards the conductors of that publication, but is solely destined to show that some of my opinions have been misrepresented, and that others have been undeservedly condemned.

It is in the Chapter on the "Nature and Causes of Vital Actions," that all the more important passages occur, which are spoken of with reprobation, as containing doctrines of an injurious tendency. This Chapter is but an amplification, in a more popular form, of an Essay "On the Laws regulating Vital and Physical Phenomena," to which the STUDENTS' PRIZE was awarded two years since by the *Professors of the University of Edinburgh;* and the greater part of which was published in the *Edinburgh New Philosophical Journal* (April, 1838), edited by Professor Jameson. There is not a single *principle* in the Chapter just referred to, which is not contained, and emphatically stated, in that Essay. The Professors of the University of Edinburgh are virtually charged, therefore, by the Reviewer of my Principles of Physiology, with having sanctioned opinions which are "detrimental to the best interests of mankind," and which prevent my work (whatever may be its value in other respects) from being "held up as a safe guide in the study of those sciences, the principles of which it professes to place before the reader."—(*Review*, p 228). It is very probable that all these gentlemen may not agree in the opinions I have expressed; but it is not to be conceived that *they* should have selected for the Prize, out of the many Essays sent in for competition, one which advocated doctrines of so dangerous a tendency as those imputed to me by the Reviewer.

The chief *misrepresentation* of which I have to complain, is the imputation to me of the opinion "that all the visible creation was at first made so perfect, that the machine of nature runs its allotted course, without requiring the continued superintendence of the Creator" (*Review*, p. 219);—an opinion which, if really expressed by me, would certainly imply my disbelief in Revelation. No passage is *quoted* by the Reviewer in support of this imputation; but the concluding paragraph in my volume is referred to as justifying it. This paragraph, which formed the conclusion of my Essay when sent in for competition, I shall give in full, that my readers may judge for themselves:—

> "If, then, we can conceive that the same Almighty *fiat* which created matter out of nothing, impressed upon it one simple law which should regulate the association of its masses into systems of almost illimitable extent, controlling their movements, fixing the times of the commencement and cessation of each world, and balancing against each other the perturbing influences to which its own actions give rise,—should be the cause, not only of the general uniformity, but of the particular variety of their conditions, governing the changes in the form and structure of each individual globe protracted through an existence of countless centuries, and adjusting the alternation of 'seasons and times, and months and years,'—should people all these worlds with living beings of endless diversity of nature, providing for their support, their happiness, their mutual reliance, ordaining their constant decay and succession, not merely as individuals but as races, and adapting them in every minute particular to the conditions of their dwelling,—and should harmonise and blend together all the innumerable multitude of these actions, making their very perturbations sources of new powers;—when our knowledge is sufficiently advanced to comprehend these things, then shall we be led to a far higher and nobler conception of the Divine Mind than we have at present the means of forming. But, even then, how infinitely short of the reality will

> be any view that our limited comprehension can attain, seeing, as we ever must in this life, 'as through a glass, darkly;'—how much will remain to be revealed to us in that glorious future, when the Light of Truth shall burst upon us in unclouded lustre, but when our mortal vision shall be purified and strengthened so as to sustain its dazzling brilliancy."

The import of this, and of several other passages in my work, will depend upon the meaning assigned to the term *Law of Nature*. That the readers of it might not misconceive my views, I have taken care to explain, very early in the volume, the meaning which I attach to it. A whole paragraph is employed on the subject in the Chapter to which I have already referred, which is the first in the "General Physiology"; and, as this Chapter has received the especial notice of the Reviewer, it is scarcely to be supposed that he could accidentally overlook the passage. Moreover, this paragraph is referred to in the Glossarial Index, as containing the explanation of the term "Law of Nature." The last portion of it stands as follows:—

> "To imagine that the plan of the Universe, once established with a definite end, could require alteration, during the continuance of its existence, is at once to deny the perfection of the Divine attributes; whilst, on the other hand, to suppose, as some have done, that the properties first impressed upon matter would *of themselves* continue its actions, is to deny all that Revelation teaches us regarding our continued dependence on the Creator. Let it be borne in mind, then, that when a *law* of Physics or of Vitality is mentioned, nothing more is really implied than a simple expression of the *mode* in which the Creator is *constantly* operating on inorganic matter, or on organised structures."

What shall be said of the *good faith* of a Reviewer who can impute to me opinions diametrically opposite to those which I have so broadly expressed, without quoting a single passage in support of his assumption?

This portion of the charge against me, although the most important in itself, is not that on which the Reviewer dwells the longest. The greater part of his animadversions are bestowed upon my opinions on Life or Vital Action, which are spoken of as "leading to dangerous conclusions" (p. 215),—as "highly exceptionable and totally destitute of foundation" (p. 219),—as "tending to lead the mind to the doctrines of materialism" (p. 219),—and as having "been repeatedly refuted" (p. 217). These dangerous, often-refuted, and baseless opinions may be briefly expressed in the two following propositions:—1. That Vital Phenomena are the result of the properties of organised tissues, called into action (according to regular laws) by the requisite conditions being afforded to the bodies which possess them. 2. That these vital properties are not, as it is commonly expressed, superadded to matter in the process of organisation; but that this act calls out or developes the properties which previously existed in the material particles subjected to it, but which are not manifested except under the peculiar circumstances which this new disposition of them produces. This act of organisation always requires a pre-existing organism for its performance.

The *first* of these doctrines is held by almost every physiologist of the present day; and it is plainly stated by Dr. Alison in his highly-philosophic "Outlines of Physiology" (3rd. Ed. pp. 7, 8). It must be the *second*, therefore, which incurs the reprobation of the Reviewer. Now it would scarcely be supposed, from the language which has just been quoted, that, in favour of this opinion, Dr. PRICHARD (to whose reputation my humble tribute can add nothing), the late Dr. FLETCHER (whom few have surpassed in acuteness of reasoning), Mr. ROBERTON of Manchester, and many other writers, have expressly contended; and that to none of their arguments has any formal reply been made. In the "Essay on the Doctrine of a Vital Principle" by Dr. Prichard, there is a long digression, in which the two questions—as to the distinctness of Mind and Matter,—and the separate existence of a Vital Principle, are clearly shown to have none but a remotely analogical relation. The same is stated by Dr. Alison. Our notion of the nature of Vitality, he remarks (p. 3) "has no connection whatever with the notion of Mind as distinguished from Matter." This testimony from Dr. A. is the more valuable for my present object, since he does not accord with the second proposition. What, then, are we to think of the qualifications of a Reviewer who could thus mix up what writers of the first authority have separated, and denounce opinions as dangerous that have no tendency whatever to the "materialism" which he regards with so much horror?

But, fortunately for myself, I can produce an unasked testimony in behalf of my real views, from an individual whose name should silence any imputations of this kind from an anonymous Reviewer. In the Treatise on Physiology contributed by Dr. ROGET to the Encyclopædia Britannica, the substance of my Essay already alluded to, with its conclusions, is embodied; and the original is thus referred to:—"However the laws which regulate the vital phenomena may appear, on a superficial view, to differ from those by which physical changes taking place in inorganic matter are governed, still a more profound investigation of their real character will shew that, when viewed abstractly from the consideration of final causes, there is really no essential difference between them, either as to their comprehensiveness, their uniformity of action, or the mode in which they are to be established by the generalization of particular facts.*" I shall not, therefore, occupy further space in defending myself from charges so groundless; since it will be easy for me, should they ever be repeated, to bring forward a body of testimony, which, with those unaccustomed to enquiries of this kind, will weigh more than argument.

I should not think it worth while to notice the remainder of the Critique, were it not that in some parts of it the bad faith and ignorance of the Reviewer are manifested in a way which may confirm, if confirmation be needed, what has been already stated. I shall take for illustration, from among many of which the fallacy could be as easily exposed, two of the remarks upon my Chapter on Respiration.

The Reviewer commences by asserting that, "with a strange want of consistency, the author attributes the changes effected on the nutritious fluid in plants by the air to a vital process, whilst in animals, he avers that the aeration of their nutritious fluid is 'a change dependent on physical laws.'"—(*Review*, p. 223). So far is this from being true, that the whole discussion of the physical character of the true Respiratory process, including the phrase

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"* See an Essay by Mr. Carpenter on the difference of the Laws regulating Vital and Physical Phenomena."

quoted by the Reviewer, occurs in the Section entitled "General Considerations;" and the principle is expressly applied to Plants as well as to Animals. In the Section on Respiration in Plants, a distinction is made between their true respiration (which is shown to be analogous to that of Animals), and the fixation of carbon from the atmosphere, which is characterised as a process of a different nature, independent, so far as is known, of mere physical laws.

The Reviewer then finds fault with the principle itself; being evidently ignorant that it has been recognised by most of the recent physiological writers. Professor Müller, for example, thus expresses himself:—"The interchange of the carbonic acid and oxygen in the lungs is wholly in accordance with the physical laws of the absorption of gases."—(Translation by Baly, vol. 1, p. 340). A little afterwards the Reviewer states as *a fact* "that the oxygen consumed is, as nearly as can be estimated, in the exact ratio of the carbonic acid thrown out." This might have passed very well twenty years ago; but every student now knows that the Reviewer's position has been long since overthrown; the independent experiments of Berthollet, Despretz, Dulong, Edwards, Collard de Martigny, Müller, and others, having united in proving that *much more* oxygen disappears than is contained in the carbonic acid of the expired air. Even Allen and Pepys, the only experimenters whose results can be opposed to these, noticed a considerable disappearance of oxygen in some of their experiments; but they set it down as accidental.

I trust that I have now sufficiently vindicated myself from the principal charges which the Reviewer has brought against me; and that I have proved his incompetency to pronounce an opinion upon the merits of my work. More than this it is not my desire to urge. And I shall conclude with again expressing my regret, at the necessity I have felt to make animadversions that so seriously affect the character of a Journal, which has rendered great services to Medical Science, and to which the Profession has been accustomed to look up with respect.

In justice to myself, I think it right to add the following confirmatory testimony from individuals whose authority on Theological questions, and in General Science, will give additional weight to my own statements. To all of these gentlemen the above Remarks have been submitted; and my only reason for not printing their replies in full, is that I am anxious to present them to the reader in the narrowest possible compass.

From the REV. J. PYE SMITH, D.D., *Theological Tutor at Homerton Academy, to* LANT CARPENTER, LL.D.

"As soon as I saw an account in the *Athenæum* of Dr. William Carpenter's Principles of Physiology, I ordered it of my bookseller. Had I not been, for more than five months, and were I not still, under the pressure of proximate duties, heavily augmented by the unexpected resignation of my theological colleague, I should have applied myself to the study of the work: I may say, I should have assiduously devoted myself to it, so far as necessary engagements would have permitted. I saw it to be such a book as I had long wished to see, and for many years had endeavoured to supply for myself, in a sort of composite manner, by adding book to book, and combining what I could learn from each in my own imperfect way of mental association. The plan of this volume at once attracted me; and I expected to find it the long-sought desideratum. It would be absurd for me to set myself up as qualified to sit in judgment upon a consummate work of science, such as this is; but I am an humble votary of Natural History, not wholly a stranger to some portions of its domain, and γηράσκω ἀεὶ μαιθανόμενος. All, however, that I have been able as yet to do, has been to read particular parts, to which I may have been directed by the rising of some subject of inquiry in my mind, or the casual occurrence of some topic to be pursued. But, when I have begun, I have found it difficult to lay down the book. The admirable distribution of its almost infinite mass of materials, the lucidness of its order, both as a whole and in its subordinate parts, its rich fullness yet close comprehensiveness, the care and success in laying down and maintaining clear conceptions of each object presented to the mind, its severely logical character in the determination of premises and the induction of conclusions, and its remarkably happy adjustment of mutual references in all the sections,—are qualities which give it a very high place in my esteem, and make a strong demand of gratitude to its accomplished author.

"Last night, after the foregoing lines were written, I became acquainted with the objections, which, in the last published number of the *Edinburgh Medical and Surgical Journal*, have been brought against the work of your talented son. This is a circumstance which exceedingly surprises and grieves me. You may well suppose it to be so, when I tell you that the very chapter upon which most of the animadversions are founded, is one of those which I had read with *peculiar* approbation and delight. It does appear a most extraordinary instance of careless observation or of designed perversion, to charge with being of an impious tendency a course of reasonings which, to my conviction, goes *exceedingly to exalt* our conceptions of the All-Perfect Deity. Dr. Wm. Carpenter has often directed our minds, in terms expressive of devout admiration, to the proofs and exemplifications of the Divine Attributes, as they arise out of instances of concatenated arrangement by him so well expounded; and I recollect one or two passages, though I cannot now turn to them, in which he acknowledges the invaluable blessing of a positive revelation of truths and prospects which our own unassisted minds could never have discovered. Our most deeply investigated views of the Divine Government lead to the conviction that it is exercised in the way of *order*, or what we usually call *law*. God reigns according to immutable principles, that is *by law*, in every part of his kingdom—the mechanical, the intellectual, and the moral; and it appears to be most clearly a position arising out of that fact, that a comprehensive germ which shall necessarily evolve all future developments, down to the minutest atomic movement, is a more suitable attribution to the Deity, than the idea of a necessity for irregular interferences.

"There are other parts of the animadversions in the Journal referred to, which rest upon such egregious inattention, to use a mild term, or sheer ignorance, that, when put into a proper light, they refute themselves. It is scarcely possible to suppose that any one of the eminent physicians or physiologists who, I believe, conduct that work, can have written the article. I would beg my young friend to make himself *perfectly easy* upon the case. The excellence and value of his work will only be displayed the more fully by this unjust attack."

From the REV. W. D. CONYBEARE, F.R.S., *&c., &c., Vicar of Axminster, to* DR. WILLIAM B. CARPENTER.

"To witness an aggression of such a nature as the attack on you in the *Edinburgh Medical and Surgical Journal*, must ever be painful to every liberal mind; but it is so utterly destitute of foundation that I think it cannot possibly be injurious to anything except the character of the journal in which it appears. With every word in your concluding paragraph I entirely concur. I have myself repeatedly expressed the same opinions, but never half so well or eloquently. The possibility of misapprehending your sentiments might have been removed by the guarded explanation you have given of the term 'Law of Nature'; but the original paragraph is so very clear to my mind, that I cannot conceive it to stand in need of one syllable of further explanation.

"With regard to the distinctive nature of the Vital Principle as it is called, I cannot see anything of a dangerous tendency in any of the opinions you have advanced. The whole question is one obviously of Physiology, not of Psychology; for the Vital Principle under discussion is common to vegetable and animal natures, and therefore belongs to beings confessedly destitute, not only of spiritual, but even of any mental principle whatsoever."

From the REV. BADEN POWELL, F.R.S., *&c., Savilian Professor of Mathematics in the University of Oxford.*

"The attack made upon you does certainly appear to me most shameful; and so manifestly unfair as to carry its own refutation along with it to any candid person who has read your work.

"The particular parts now adverted to claimed my attention from the first; and as far as my opinion of the philosophical or logical character of the reasoning goes, I am most happy to give it. Having lately re-perused these chapters with great attention, I can most truly say that I remain fully impressed with a conviction, not only that no inference of any dangerous tendency can be fairly made from these, but that the subject is so illustrated as in my opinion to afford the firmest ground for establishing those higher conclusions to which you more especially advert in the last chapter.

"In particular, the meaning of the term 'Law of Nature,' the notion of the permanence and uniform action of the great mechanism of the universe down to its minutest parts, appears to me most perfectly to accord as well with the soundest philosophy as with the most elevated notions of the Divine Attributes. It appears to me, that the more the great questions connected with Natural Theology are *dispassionately* studied, the more will it be seen that such views as these are the real foundation on which its sublime conclusions rest."

From the REV. WILLIAM CLARK, M.D., *Professor of Anatomy in the University of Cambridge.*

"I much regret that you have reason to complain of the opinion which is published in the *Edinburgh Medical and Surgical Journal* of your Comparative Physiology; for I read your work, when it first appeared, with much delight, as that in which the greatest number of interesting facts, most ably digested, has yet been brought together in our language; and certainly with the impression that it strongly enforces upon the student the conviction of an omnipresent presiding First Cause—the benevolent Creator and Preserver of all things. In consequence of your letter, I have read the principal chapters over again, and still hold the same impressions regarding it. Consequently I am greatly surprised that charges should have been advanced against the religious tendency of your work; and cannot doubt that any candid person will, on even a cursory examination, find such charges to be altogether unfounded."

From the REV. J. S. HENSLOW, *Professor of Botany in the University of Cambridge.*

"I can see nothing in your account of the mode in which the Omniscient Creator may be supposed to interfere with the destiny of his creatures, that can be considered, in the smallest degree, as militating against the truths we derive from revelation. I can only suppose that the close and narrow-minded views with which some persons are apt to look upon the wonderful discoveries of modern times, prevent them from understanding how possible it is for a man to be duly impressed with the truths of revelation, though he is equally satisfied that they were never intended to interfere with the freedom of his researches into those great natural laws by which God frames and governs the Universe and all that it contains."

From Sir John F. W. Herschel, F.R.S., *&c., &c.*

"It would appear to me very difficult to find wherewithal to accuse you of advancing an opinion that 'the visible creation was at first made so perfect that the machine of nature runs its allotted course without requiring the superintendence of the Creator'—an opinion which no man of common reason, or who is accustomed to assign meanings to the words he strings together, can for one moment entertain. As you require my opinion on this point, I am happy to afford it—not as a question of science, but as one of common sense, and logical interpretation of words."

From Dr. Roget, *Secretary to the Royal Society, &c., &c.*

"I have no hesitation in saying that nothing that I have met with in your work in any respect warrants the imputation of its doctrines having a dangerous tendency—an imputation, as it appears to me, ridiculous and wholly unfounded."

From Dr. Prichard, F.R.S., *&c., Bristol.*

"I think you have fully vindicated yourself from a most unfounded accusation, which proves folly and ignorance, and even something worse, on the part of your anonymous assailant. You ought, in justice to yourself, to give all the publicity you can to the defence."

From Dr. W. P. Alison, F.R.S.E., *Professor of Physiology in the University of Edinburgh.*

"I have never seen the slightest reason for changing the opinion which I stated in my Outlines, that no hypothesis which can be framed, as to the manner in which vital properties are communicated to organised beings, affects the conclusions in Natural Theology to which the study of these beings leads; because these conclusions rest upon principles altogether independent of any such hypotheses—on the principles that all change implies a cause, and that all adaptation of means to ends implies an intelligent cause.

"I can perfectly understand, therefore, and fully believe, that you, and others who hold similar language to yours, as to the connection of Life with Organisation, are equally impressed with the evidence of the great truths of Natural Religion, drawn from the study of Physiology, as those who use the language on the subject which seems to me more correct."

From Dr. Holland, *Physician Extraordinary to the Queen, &c., &c.*

"In reading your volume on the Principles of Physiology, I was struck, besides its other excellencies, with the tone of religious feeling which pervades the whole. The last chapter, on the proofs of design, impressed me strongly in this light. And in treating on the difficult and disputed questions regarding a vital principle, the laws of vital action, and the relations of the latter to physical laws commonly so termed—it seems to me that you have never exceeded the authorized bounds of physical research, as pursued by the most eminent physiologists.

"I will further add my general impression, that, whatever the differences of opinion on these particular topics, you have been careful, and have succeeded, in keeping them all in subjection to that First Great Cause, from which laws as well as phenomena are equally and solely derived."

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